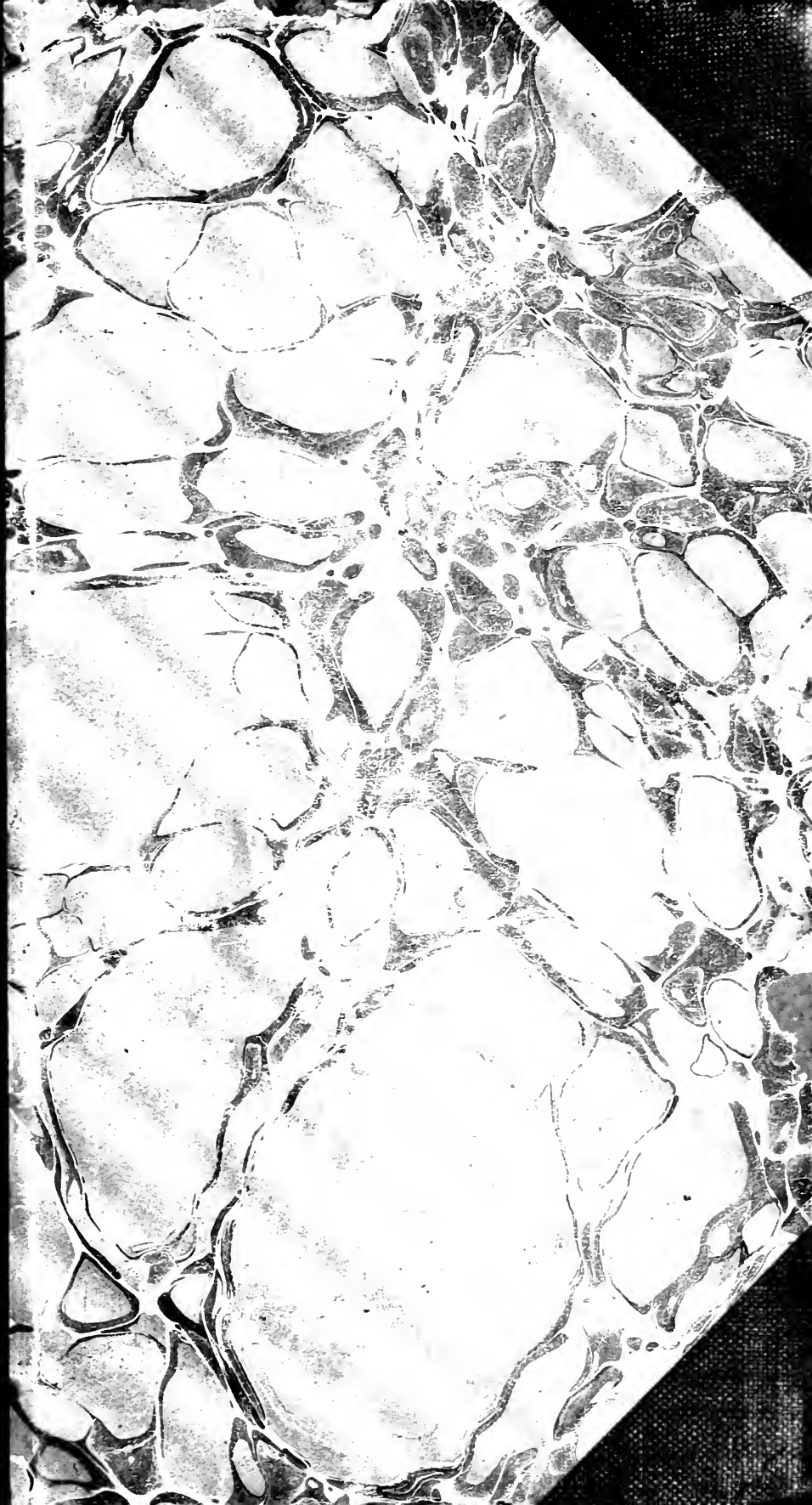




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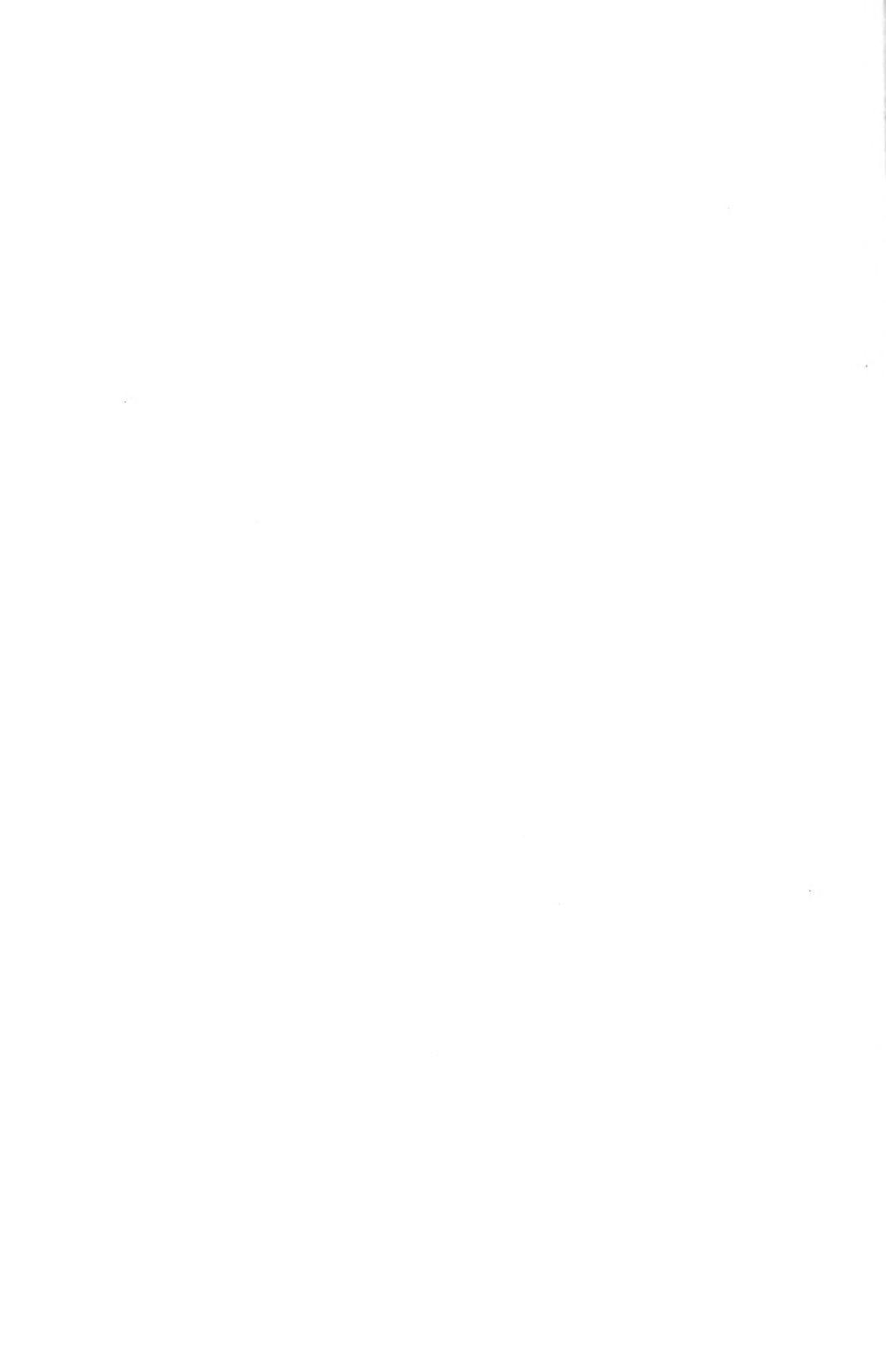
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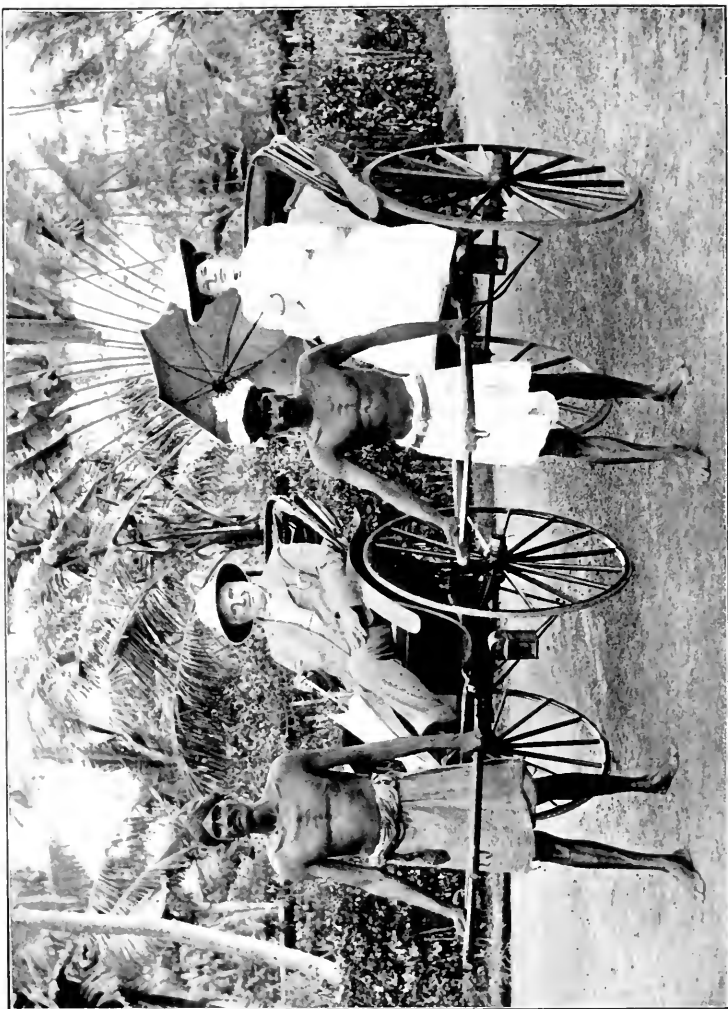
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[G. H. M.]

MR. AND MRS. MELLOR AT COLOMBO, 1905.

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.

CEYLON, WITH A RETROSPECTIVE GLANCE, 1905.

By E. W. MELLOR, J.P., F.R.G.S.

[Addressed to the Society in the Geographical Hall, on Tue-day,
December 5th, 1905.]

FOLLOWING up the long series of Voyages of Discovery, inaugurated in the fifteenth century by that remarkable and enterprising Portuguese Prince known in history as "Henry the Navigator," a Portuguese ship doubled the Cape of Good Hope, and having made its way into the Indian Ocean, there found an Island whose shores were fringed with groves of Cocconut Palms, beneath which flourished a growth of smaller trees and shrubs, often thickly matted together by gay flowering creepers, beyond these cinnamon, and other spice-bearing trees in luxuriant profusion—altogether an island greatly to be desired.

This was Ceylon.

News was carried to the dark-brown King of the Island, by natives of like colour, that close to the spot where now stands the City of Colombo there had anchored a ship containing "men surpassingly white and beautiful, wearing boots and hats of iron, eating a white stone, and drinking blood, and having guns which could break a castle of marble," for so to their untutored minds seemed the armour, the white bread, the red wine, and the cannons of the Portuguese.

Fierce were the struggles with the native Kings, but the white men had come to stay!

In 1505 the Portuguese established themselves in Ceylon, erecting fortifications at Colombo.

Francis Xavier, sometimes called the "Apostle of the East," came, and taught, and made converts to the Roman Catholic Faith.

The effects of the Portuguese occupation, which lasted 140 years, are still visible in the number of persons bearing names obviously of Portuguese derivation, and in the large body of native Roman Catholics dwelling in the midst of the Buddhist population.

But the Portuguese were never able to subdue the mountain people, the Cingalese Highlanders, in the centre of the island, who, under their Kings of Kandy, maintained a perpetual guerilla warfare.

The wealth of the island excited the cupidity of the Dutch, and in

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1602 they made an alliance, with the object of gain, with the King of Kandy. In 1638 they landed a force to assist their ally against his Portuguese enemies, with the result that the Portuguese were driven out of the island, and the Dutch in their turn established themselves in Ceylon.

Many evidences of the Dutch occupation remain, and we shall find them notably at Point de Galle.

The end of the eighteenth century, you may remember, found Holland at war with Great Britain. The fighting spread from Holland to Ceylon, where the possessions of the Dutch were captured by the English. The Dutch finally evacuated the island in 1796, and in 1798 the first British Governor was appointed.

Ceylon, poetically called "The Eden of the Eastern Wave," is now the Premier Crown Colony of the British Empire.

Thirty-four years, however, elapsed before the last King of Kandy, whose methods were cruel and bloodthirsty, was finally subdued after inciting several rebellions, and causing much bloodshed.

The British have thus accomplished that which neither the Portuguese nor the Dutch were able to accomplish—that is, the conquest of the Mountain-dwellers and their King, and the bringing of the whole island under one peaceful rule.

As a result of this beneficent rule, instead of roughly-cut jungle-paths, uneven and swampy, impassable for wheeled traffic, and often intersected by wide and rapid rivers, the whole island is now traversed by good, broad highroads, well made, and well drained, and carried by strong and handsome bridges over narrow streams and wide rivers. Splendid works of irrigation are in operation. Persons and property are secure, and on all sides are signs of prosperity.

Let us now glance at the geographical aspect of Ceylon.

If we imagine the coast-line of the great Indian Peninsula to be like a lady's jewelled necklace, then Ceylon is the pear-shaped jewelled pendant at the end of that necklace.

Compared with the size of India, how small is its pendant! And yet this jewelled pendant, Ceylon, is about equal in size to Belgium and Holland put together, or three-fourths the size of Scotland.

The greatest length of the island is 270 miles, and the greatest width 137 miles, with an area of 25,481 square miles.

The name Ceylon is a corruption of an ancient native name, "Sinhala," which signifies "Island of Lions," although no lions are to be found there nowadays. From "Sinhala" is derived the modern descriptive name "Cingalese."

The north of the island and the coast is of coral and coral limestone formation, with great blocks of gneiss rock rising in the centre to lofty mountains, whose slopes are covered with thousands of acres of tea plantations. Tea grows at a height of more than six thousand feet above sea level.

Kandy, the ancient capital, is in the centre of the island, high up amid the mountains and tea estates.

Colombo, the modern capital, the largest city, and the seat of government, is down on the sea coast, on the west of the island.

According to the census of 1901, the population of Ceylon is upwards of three and a half millions, of whom nearly two and a half

millions are Cingalese; nearly a million are Tamils, an Indian race; while only 6,300 are Europeans.

Of this three and a half millions of population, over two millions are Buddhists, which is, therefore, by far the prevailing religion of Ceylon; indeed, Ceylon has long been venerated, as we shall see, as the sacred land of Buddhism.

Of the population, nearly 60 per cent are Buddhists, 27 per cent are Hindus, and only some 10 per cent are Christians.

Colombo harbour is one of the finest artificial harbours in the world, thanks to a magnificent breakwater! Six hundred and sixty acres of water are enclosed with a depth of upwards of thirty feet. Men-of-war and the largest liners can therefore be easily accommodated.

The opening of the Suez Canal no doubt brought the stream of traffic in this direction, and now almost all the lines of steamers running from Europe to the East, and to Australia, call here.

Beyond the large coal-lighters we come to the landing jetty.

But the curious boats, or canoes, between us and the jetty, excite our interest.

They are called catamarans, and are, each of them, hollowed out of the trunk of a tree. They are extremely narrow, being a close fit for one person. Safe balance is secured by an out-rigger arrangement, by which a beam, or float, is attached by poles, about ten feet long, to the body of the boat.

They carry a sail, which enables them to fly before the breeze, and the out-rigged balance enables them to stand a very rough sea.

Here, we are in one of the principal streets, Queen Street. (See page 4.) The lighthouse is one of the peculiarities of Colombo. It stands, as you see, right in the town, and is a point to which several streets converge. (It stood here long before the building of the breakwater.)

The lighthouse towers so high above the houses that its beams are seen at a great distance out at sea.

The gentleman striding down the middle of the street is an Afghan.

There is quite a colony of Afghans in Ceylon, and big fine chaps they are, too; taller and bigger than the Cingalese, and they generally wear more clothing. The principal trade of the Afghans in Ceylon is horse breeding and horse dealing.

Mrs. Mellor and I went about Colombo in rickshaws, drawn by coolies, who will run with you, for a long distance, at a louping trot, without showing any signs of distress, but the stones in the roads must be trying to their bare feet. (See frontispiece.)

Our two men were not pure Cingalese, but Tamils, an Indian race, and seem somewhat more capable of sustained hard work than are the Cingalese.

Unlike the Cingalese, these Tamils wear their hair short, and cover their heads with turbans.

Notwithstanding a somewhat truculent-looking exterior, the tastes of the Tamil coolie are very simple, his ideas are few, and he usually lives at peace with his neighbours, especially if his somewhat outlandish customs and prejudices are respected.

In Colombo you find rows of Tamil Rickshaw Coolies, waiting for hire, like a row of cabs.

Note another rickshaw man, not a Tamil, a Cingalese; you see his long hair is done up into a chignon behind his head.

The Indian and Cingalese women carry their babies, not in their arms, but astride their hips, one little leg dangling down in front and the other behind.

On our way we pass the entrance to a Hindu temple, in one of the smaller Colombo streets. The ornamentation is elaborate and rather



QUEEN STREET, COLOMBO.

[C.W.M.]

barbaric, as perhaps befits a faith in a multitude of spirits, where it is believed that the good spirits will not hurt you because they are good, but the evil spirits must be propitiated because they are evil.

Hinduism seems to me a lower and more debased type of religion than Buddhism, which has a moral philosophy.

Now, moving southward along the coast for some 75 miles, we arrive at Galle. Galle was a busy emporium a thousand years before Colombo assumed importance.

Sir Emerson Tennant says:—"Galle is by far the most venerable emporium of foreign trade now existing in the universe; it was the

resort of merchant ships at the earliest dawn of commerce." He then proceeds to show, at greater length than I can quote here, that Galle was the ancient Tarshish of King Solomon, and how ivory, apes, and peacocks are indigenous to Ceylon. Let me refer you to his work.

The harbour is small, and not very safe in rough weather, but as there is considerable depth of water, Galle is accessible to large ships.

Landing at the wharf, we enter the town through an old Dutch gateway, which bears the date 1669. The great strength of the fortifications which the Dutch erected here, is a characteristic of their occupation.

Galle was *the* port of the island. The Dutch had a big struggle to capture it from the Portuguese, and meant it to be impregnable for themselves. But "*Tempora mutantur*," and the glory of the old Point de Galle has waned before the greater facilities of the younger Colombo.

To-day the old Dutch ramparts, which are pierced by that gateway, form a delightful promenade towards the sea.

At the outset I said that we should find, notably here at Galle, evidence of the Dutch occupation. Well, here is a street as much like an old Dutch town as I should think it is possible to find in the tropics. A street facing a canal, but the Dutch people are replaced by the dark-brown Cingalese natives.

Our journey now takes us along the inland country roads. At intervals we pass at the roadside strange-looking objects.

They are ant-hills, the home of colonies, or succeeding colonies, of ants. Ant-hills are of varying sizes, from a yard to twelve or fifteen feet high. It is always well to remain at a respectful distance from an ant-hill, for not only can the thousands of little creatures, whose home it is, be angry and make a formidable attack, but even when these ant-hills are deserted by the ants, their empty home is frequently appropriated by that deadly snake called the cobra.

I heard of a native incautiously putting his hand into the opening of a deserted ant-hill to find some game he was hunting, and receiving a bite from a cobra, from the poison of which he died in two hours' time.

Continuing our way, we pass through a country village called Kekerawe, and it is a very fair specimen of the villages which have improved by clearing away the surrounding jungle. Notice the wide and excellently made high road, though here at Kekerawe we are far inland, and a long way from a large town. The huts are apparently very roughly constructed, but with their thatched roofs they make the village look very picturesque. (See page 6.)

We note a better class hut; indeed, it is a homestead combined with the village shop, or "*boutique*," as they are termed.

The walls and floor are of mud, the roof is of thatched palm leaves, and the front is opened or closed by means of wooden boards.

The wants of the Cingalese are few—Nature being most bountiful—but such wants as they have are amply supplied by these village "*boutiques*."

Of fireplaces, chimneys, and cooking ranges there are none. In this climate the cooking is done out in the open. You may

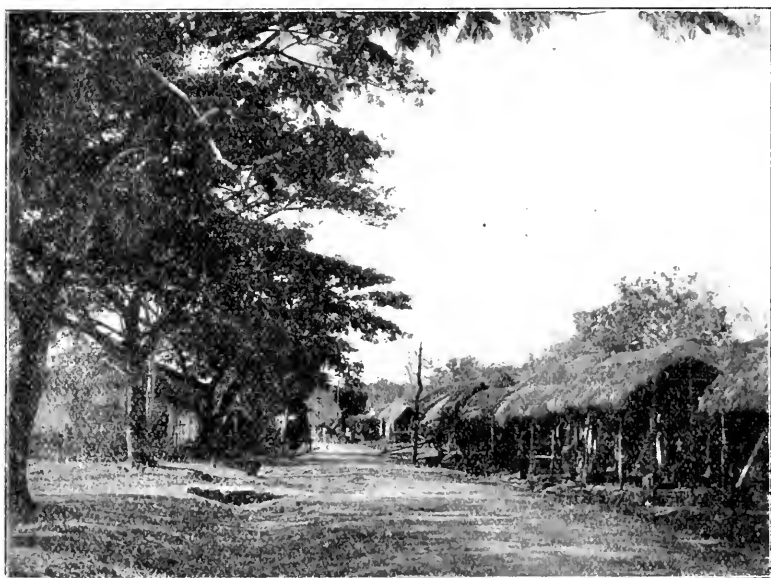
often see Coolies preparing their evening meal after the day's work; their cooking utensils are raised on stones over a fire of wood. They knead the ball of rice in their hands, dip it into their curry stuffs, which they are clever at compounding, perhaps flavour it with dried fish, and so to their mouths.

They thus live very cheaply out of their earnings; they lay them down to rest, on their palm-leaf mats for a bed, and are content.

But the trouble comes when illness, or sickness unto death, appears.

Of doctors and Government Hospitals, well administered, there are plenty.

The more enlightened and educated Cingalese may avail themselves of them, but the average Coolie or labourer thinks they may do for



VILLAGE OF KEKERAWÉ, CEYLON.

[E.W.M.]

the white man; he prefers to pin his faith to the Devil Dancers, whom I saw on several occasions going through their strange antics, to the accompaniment of tom-toms, and the jangling little bells with which their dress is adorned, and with a peculiar rhythmic motion; on one occasion especially, at Kandy by torchlight, at night, when the effect was most weird.

One day I passed a hut with some hideous tom-toming and jangling Devil Dancers outside; I asked my native guide the meaning of it, and he replied that he thought a woman was dying inside the hut, and it was to scare the evil spirits away.

Poor soul! Yet these are facts, of the present age, among our fellow-subjects.

But you perhaps ask me, how do we Europeans fare when travelling along these country roads, having only such roughly-constructed huts?

I reply that at every fourteen miles the Government has placed buildings, called "rest-houses," intended primarily for Government service, but travellers can stay in them for three days at a fixed rate of charges.

The rest-house at the little village of Nalande is one of the most prettily situated which we encountered, and it is a good specimen of these comfortable little hostelrys erected by Government.

Under the green shade of a large Tamarind tree is the rest-house; it is a bungalow, and has a red tiled roof, so has the stable where our horses and bullock are stabled, for our luggage had to go in a small bullock hackery, or cart.

The rest-house keeper is a Government servant. He is also the butler, waiter, housemaid, and chief cook, and it is really wonderful what he, and others like him, can do at very short notice.

When you arrive, a fowl is killed, and you are presently regaled with chicken soup, chicken cutlets, roast fowl, grilled chicken, chicken curry, and possibly chicken in some other form—chickens are the great stand-by.

His dress is characteristic, the long hair brushed back into a chignon behind, and a semi-circular tortoise shell comb over the top of the head—it is universally worn by the Cingalese men—white jacket, and long camboy, which is like an elongated kilt.

On our journey we pass the entrance gate of the important Buddhist Temple of Kelani.

The buildings on the left are the rooms of the priests and their attendants—we might almost call them cloisters.

We shall see more ancient and historic temples. I will therefore only add that this Kelani Temple dates from the fourteenth century.

It is believed that Buddha visited the spot, and from here rose aloft into the air, and left the imprint of his foot on the mountain, which we shall see presently, Adam's Peak.

But I want you to notice the great tree, at the left of the Kelani Temple, with its gigantic fruit.

It is the Jak fruit, the largest of all edible fruits, each fruit weighing from forty to fifty pounds. They are pale green in colour with a granulated surface.

A large tree will bear as many as eighty of these fruits; Europeans do not seem to like the flavour, but it is frequently used as an ingredient in the native curries. It is much relished by elephants, and it seems an appropriate food for those huge beasts.

Bananas are a great crop, and have a large consumption, consequently they are an important article of Ceylon commerce, although I do not think they are largely shipped, as they are, for example, in the West Indies.

Bananas are brought by bullock cart to a station of the Ceylon Government Railway for consignment to the Colombo market.

All this time we have been climbing higher, and higher, and higher, until we arrive at Nuwara Eliya, 6,240 ft. above sea level—*i.e.*, nearly 2,000 ft. higher than our loftiest Scotch mountain, Ben Nevis.

Nuwara Eliya is beautiful for situation, in an elliptical valley about

eight miles in circumference, and surrounded by mountains rising from a few hundred to two thousand feet.

At this great altitude the pure mountain air is sharp and bracing, with a mean temperature of 57 deg. Fah.

Frosts are occasionally experienced, and one is glad of a blanket, and sometimes even of a fire!

Think what this means so near to the equator!

No wonder that Nuwara Eliya is regarded as the sanatorium of the white man!

The jaded merchant of sweltering Colombo, the pale and languid victim of the sultry plains, and the Anglo-Indian, journey up the 6,000 ft. to Nuwara Eliya here and find their appetite, and their energy and vigour return, thanks to the bracing mountain air.

The view of Nuwara Eliya, with Lake Gregory in the foreground, has been compared to the western Highlands of Scotland, and to the Welsh mountains, and, by another recent writer, to Ullswater. But what *does* interest us is, that the dark green on those mountain slopes consists of acres upon acres of tea plantations.

We visited a mountain-side tea plantation, and noted the regular lines of tea bushes.

The variety of tea usually cultivated in Ceylon is the Assam, and a cross between the Assam and the China variety, called the Hybrid.

The tea plantations must be kept thoroughly clean, and are generally weeded by contract, at the rate of 1s. 4d. per month, and are thus kept almost entirely free from weeds and grass.

The conical mountain peak emerging through the cloud in the distance is the famous Adam's Peak, which rises to a height of 7,352 ft. above sea level, and is a conspicuous object for many miles.

On the summit there is a mark supposed to resemble a gigantic human foot-print, which the Mahomedans ascribe to the father of the human race, Adam, hence the name Adam's Peak.

But Buddhists tell you that Buddha rose into the air from the Kelani Temple, where we saw the Jak fruit, and in passing left the impression of his foot on this mountain.

Thus Adam's Peak is an object of deep veneration to the devotees of both religions, and they come in pilgrim bands from all parts of Asia to climb, with much privation and hardship, that steep and rocky cone, for their souls' benefit.

But to return to the tea:—

The tea leaves, at the proper time, are picked by women and children. They rapidly gather in each hand a handful of young leaves which are then thrown with unerring aim, over their shoulders, into the large baskets which are suspended from the women's heads. The baskets, when full, hold about fourteen pounds weight.

These women earn about 25 cents, equal to fourpence, a day, and many of them come long distances, even from India, to earn such high wages!

The first young leaves give the "Orange Pekoes," and the older leaves the "Souchongs" and "Congos."

The leaves, when plucked, are brought to the tea factory, and every tea estate has its factory.

We inspected the factory on the Naseby tea estate near Nuwara Eliya; new and up to date in all respects. In the factory the green leaves are carefully spread on large broad racks on the upper floor, where they are dried in a gentle current of warm, dry air; then they pass down through shoots into the rolling machines on the ground floor, where they are twisted up into the shape so familiar to us all. Then sorting, grading, and packing has to be done, and the tea is ready for the customer. We brought home a small chest of tea from this factory, and very good we found it. Ceylon, I am given to understand, now does a larger export trade in tea than China does.

The tea bushes, left to themselves, would grow into trees eighteen or twenty feet high, but they are severely pruned at intervals of eighteen months or two years. They are thus kept, as you see them, flat-topped bushes, about three feet high.

Now travelling northwards for about sixty miles, and descending between four and five thousand feet (and I may say, in parenthesis, I checked off the altitudes as given in the books by my usual travelling companion, my pocket aneroid), we arrive at Kandy, the old capital of the later native Kings.

We looked down on Kandy from the mountain road to the east of the town. Below is the Lake of Kandy, an artificial sheet of water made by the last King of Kandy, in 1807, by forced labour. A conspicuous object is the small, square island. Tennant says that on that island was the King's harem, and that he had the pleasing habit of inviting persons who had incurred his displeasure to visit that island, and of dropping them into the water when half-way across.

But then this King was a cruel tyrant, and had got rid of his competitors to the throne by methods of barbarous torture. When retribution came in the English advance on Kandy, he ordered the head of the messenger who brought the news to be struck off. Another messenger, who brought the news of the defeat of his troops, he ordered to be impaled alive; and then, when the English marched into Kandy and took possession, he precipitately fled.

Situated in the midst of a regular amphitheatre of hills, the natural beauty of the position of Kandy renders it one of the most charming spots in an island abounding in lovely scenery. Professor Douglas Archibald describes Kandy as "A casket of gems," "A romance, a dream of what Nature can do."

Projecting into the lake is the United Service Library, the scene of many historic meetings of the Ceylon Planters' Association, formerly part of the palace of the native Kings.

Behind is the famous Tooth Temple, probably the largest and richest Buddhist Temple in Ceylon.

To the left is another Buddhist temple, and a Hindu temple.

But, you ask me, what of Kandy itself? Where is the town?

Well, Kandy has been so repeatedly captured and burned by the Portuguese, the Dutch, and the English, that, beyond these temples, there are no buildings of historic value or importance; consequently, Kandy consists of a congregation of low white houses, after the Oriental manner.

The principal street of Kandy is Trincomalie Street, with its endless stream of natives, in raiment of many varied hues, passing to and fro.

According to the census of 1901, the population of Kandy is 26,336, of which 13,740—rather more than one-half—are Cingalese, 4,580 are Tamils, and only 400 are Europeans.

To the right of Trincomalie Street is the Police Court, a building with white pillars. Behind the Police Court is St. Paul's Church, a red brick church with a square tower, the principal English church in Kandy. In that church I heard the Sunday service taken jointly by an English and a black clergyman, but out there you soon get used to the ministrations of black parsons. The services are both in English and in Cingalese.

The handsome fountain in the foreground was erected by the planters of Ceylon to commemorate the visit to Kandy, in 1875, of the King, then Prince of Wales.

When the present Prince of Wales visited Kandy, in 1901, he held a grand reception of the Kandyan Chiefs in the Audience Hall, and it was a scene of as dazzling brilliance as, perhaps, the old pillars had ever previously witnessed.

The pillars are of teak wood, richly carved, black with age, and are considered admirable specimens of florid Hindu architecture.

Another striking scene of deep historic importance took place in this Audience Hall on the 2nd of March, 1815, when the last Kandyan King was formally deposed, and his dominions were vested in the British Crown.

The hall is now used as an Assize Court, where the judges come periodically to hold criminal trials. I saw here, on the same day, a white jury and a coloured jury, and heard trials in progress in the three languages, English, Cingalese, and Tamil.

I saw a typical Ceylon ox-cart coming away from the Kandy Market, the cart high and narrow, and closed in with palm-leaf thatch. The cattle are the Mysore humped breed, with long horns. (See page 11.)

A pair of these animals can draw more than a ton of tea, or other produce, up a step incline, by the mere pressure of their humps against the cross-bar, which rests on their necks, and is attached in the centre to the pole of the cart.

The Ceylon carter stands between the two animals, in which position he pokes, pushes, and pulls each animal in the way he wishes it to go.

A favourite walk at Kandy, in the late afternoon, after the heat of the sun has passed, is round the lake, by the Lower Lake Road, a walk of some two miles or so. During the walk you see how delightfully and picturesquely the Kandy residents are able to place their bungalows.

The tiled roofs are carried forward, and supported by pillars, forming a cool and shady verandah, and affording ample protection from the heat of the blazing sun, or, as evening comes on, in which to sit and listen to the buzzing of myriads of winged insects, or watch the fire-flies' fairy lights flit sparkling through the trees.

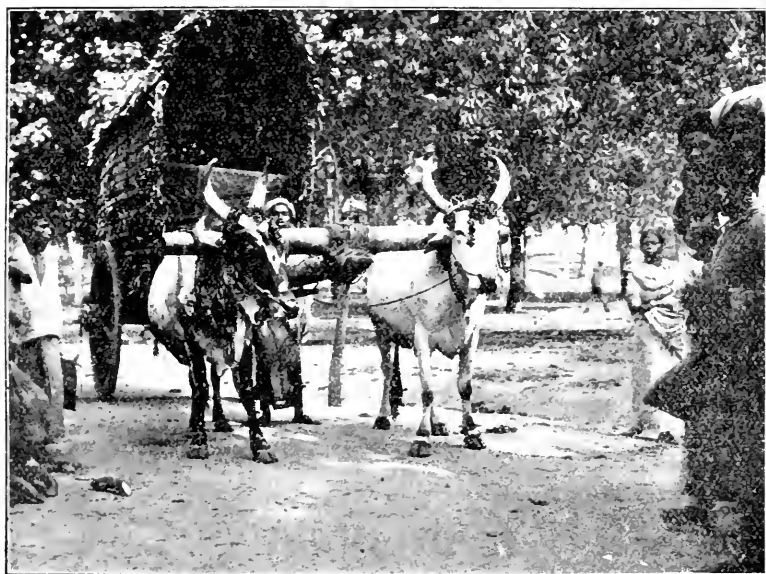
How steeply the hills rise from the lake! With what a wealth of foliage the hill sides are clothed! What endless variety! All shades from bright green to russet brown!

Then, here and there, graceful and feathery cocoa-nut palms overhang the lake; they are trees which love the water, and seem to lean affectionately towards it.

In the neighbouring Perediniya Gardens, the Royal Botanical Gardens of the Government, we find some gigantic india-rubber trees.

The little plant with the bright green oval leaves, which we are accustomed to see in our conservatories, grows to this enormous size in its native climate.

Owing to the great demand for india-rubber for electrical purposes, and for the tyres of motor vehicles, the rubber trade has been booming. The Ceylon planter is alive to this, and is now cultivating, in large quantity, the Para rubber tree, originally brought from the Amazon valley, and, as far as I could see, with every prospect of success.



CEYLON OX CART AT KANDY.

[E. W. M.]

In these Perediniya Gardens are some enormous clumps of giant bamboos.

These are the malacca variety, and grow to a height of a hundred feet.

Down below, on the right, is the great river of Kandy, the Mahaweliganga.

The Mahaweliganga is here crossed by a very remarkable bridge, made entirely of yellow satin wood, which formerly was so plentiful that it was used for common building purposes. The bridge has a single span of 205 feet, and there is neither nail nor bolt used in its construction, the whole of the massive wood work being merely dovetailed together.

The river is seventy feet below the arch, but at the burst of the monsoon such a torrent rolls down that the bridge clears the water by ten feet only.

The bridge has stood the damp and tropical heat for nearly seventy years, but extensive repairs are in progress, and I fear that, ere long, it may become a historic memory.

Familiar objects on the bank of the Mahaweliganga, a name which signifies "great sandy river," and it is by far the largest river in Ceylon—are some elephants.

These elephants are, of course, tame, and are well looked after by their keepers.

There are wild elephants in parts of the jungle remote from the haunts of men—sometimes they give trouble; for instance, while we were in Ceylon, a herd of wild elephants objected to the railway line which the Government is now making to the north of the island, and came at night and tore up and scattered the wooden sleepers, which the Coolie labourers had, with much toil, laid during the day.

The elephant is not as much employed in Ceylon now as he was formerly, and as he still is in Burmah and parts of India. He has been ousted in Ceylon by the buffalo, who does all the work in the rice fields, and by the ox.

Let us now visit the only buildings of antiquity in Kandy. An arched gateway leads to two small Hindu temples, one sacred to the god Nata and the other to the goddess Pattini, the goddess of Chastity. The gateway has curious figures carved upon it, the "Markara Torana," a group of divinities who watch the approach to a sacred place.

Passing through the gateway, we enter a grove, where, in addition to the Hindu temples I have just mentioned, we find a bell-shaped shrine called a Dagoba, and nearly every Buddhist temple has its Dagoba. A Dagoba is a solid piece of brick or stone work, built round a relie of Buddha, however small that relie may be.

The Dagobas are regularly painted white—this one is very small compared with the Dagobas of antiquity we are going to see. Before the Dagoba is a stone altar, on which the faithful lay their flower offerings, almost invariably the beautiful "Plumiera," with its pure creamy petals and yellow heart.

From this, it is more generally called the "Temple Flower." These flower offerings are a great feature of Buddhist worship.

Beyond the ornamental wall is the famous Tooth Temple, of which let us now have a nearer view. (See page 13.)

The Dalada Maligawa, or Temple of the Tooth, is a substantial building, dating from the fourteenth century, to contain the reputed tooth of Buddha. The temple stands in its own moat, like a baronial castle of feudal times. The moat swarms with tortoises, which swim to you readily to take any crumbs you may throw them.

The Octagonal Tower, with its pointed roof, is called the Oriental Library, and contains a rare and valuable collection of the Buddhist Scriptures from the earliest times, written on Olas—prepared strips of leaf of the Talipot-palm—on which the letters are scratched with a pointed iron stylus.

These Buddhist classics are continually guarded by yellow-robed Buddhist priests.

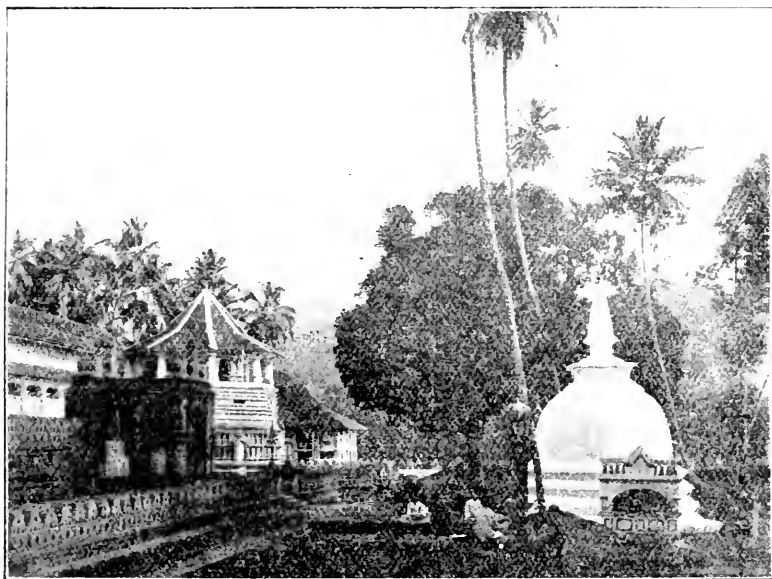
Let us pass round to the *entrance* of the temple.

Note the elephants carved in relief on the stone panels—they are old Ceylon work—the elephant symbolising majesty and power.

The two handsome brass lamps are modern, and were a gift from a former Governor, Sir William Gregory.

At five o'clock in the morning the tooth worship begins, amid the most tremendous din that I think ever battered my ears, performed by black musicians (save the term!) on tom-tom, conch, and flageolet.

Let us face this music and enter, and see the relic, which is the object of veneration and worship to so many hundreds of thousands of



TEMPLE OF THE TOOTH, AND DAGOBA, AT KANDY.

[E.W.M.]

devout Buddhist pilgrims from all over Asia—I saw Buddhist pilgrims here even from far China.

Within a large silver-gilt bell-shaped shrine are six shrines of similar shape, decreasing in size, all of pure gold, ornamented with cat's-eyes, rubies, pearls, and emeralds, the last two quite covered with square-cut rubies—the final one contains the sacred tooth.

It is said to be one of Buddha's canine teeth, but it more resembles the tooth of a crocodile than the tooth of a human being; still, the faithful believe it genuine.

It is supported by twisted gold wire from the centre of a lotus flower of pure gold.

At the festival of the Perahera, this tooth relic in its shrine is carried in procession through Kandy. The shrine is placed in the

canopied howdah of a gorgeously caparisoned elephant; two smaller elephants, gaily decorated, are placed one on each side as an escort. These are followed by some forty more elephants, ridden by head men, their attendants holding over them gold and silver umbrellas. Then come devil-dancers, throwing themselves into all possible contortions, to the most ear-splitting accompaniment of tom-toms, conch-shells, brass cymbals, and shrill pipes.

Altogether the most weird and barbaric procession imaginable. The festival of the Perahera has been thus celebrated for hundreds of years.

The Kandy Tooth Temple carries us back to the fourteenth century, our mediæval age, the time of Edward III. and the Black Prince, but it is a comparatively recent period as regards Ceylon; for the history of Ceylon can be traced back for nearly six hundred years before Christ, and has handed down to us relics of antiquity which, in the estimation of some writers, rank only second to the antiquities of Egypt.

To enable us to follow this better, let us look again at the map of Ceylon. We see Colombo, the modern capital, Galle, Nuwara Eliya, Kandy among the mountains, and tea plantations.

Further north, in the plain country, there are, here and there, irrigation reservoirs, or tanks, as they are called, and paddy, or rice fields.

Now let us take our retrospective glance, and compare the Ceylon we have seen with the Ceylon of 2,000 years ago.

Then, when England was still unknown, when the early Britons were savages, stained with woad and clothed in skins, the whole prospect in Ceylon was one of fertility and resource.

Five hundred and four years before Christ, Panduwasa, King of Ceylon, married a wife from the Indian Continent.

This princess was accompanied by a brother named Anuradha, who founded a city, named after him, Anuradhapura. Now, Anuradhapura attained great wealth and magnificence, and became the capital of the Ceylon of those remote times.

The lofty palaces, temples, monasteries, and shrines of Anuradhapura covered an area of many square miles, thousands of people passed to and fro through her streets; also numbers of elephants, in whose gilded howdahs were seated nobles in gorgeous silk apparel.

Such was the splendid city of Anuradhapura two thousand years ago: to-day we wander through her scattered ruins.

Anuradhapura was, and still is, the sacred city of Buddhism; her magnificence was the outcome of Buddhist zeal.

But perhaps you ask me—How do I know that these things were so?

I answer that there exists an ancient chronicle, commenced as far back as the year A.D. 460, by a Buddhist priest, or monk, named Mahanamo, uncle of the then reigning monarch.

(This was about the period of the Saxon invasion of England under Hengist and Horsa, and about 400 years prior to the time of Alfred the Great.)

That ancient chronicle is called "The Mahawansa," a name which signifies "Genealogy of the Great."

It is written in ancient Pali verse, and was a sealed book until 1826, when Mr. George Turnour, a Ceylon civil servant, obtained a clue to its translation. According to Mr. Turnour's translation, the opening sentence of that ancient Buddhist monk's writing runs thus:—

"Adoration to him, who is the deified, the sanctified, the omniscient, supreme Buddha!"

"Having bowed down to the supreme Buddha, immaculate in purity, illustrious in descent, without suppression or exaggeration, I celebrate the Mahawansa!"

He then goes on to describe the introduction of Buddhism into Ceylon, and to chronicle the piety, the majesty, and famous deeds of the succeeding Kings.

Let us, then, with the Mahawansa as our guide, visit these spots, so sacred to the heart of the devout Buddhist:—Mihintale, Anuradhapura, Dambulla, Sigiri. And here let me say that the monuments themselves since their symbols and inscriptions have become understandable, confirm and corroborate the Mahawansa.

Three hundred and seven years before Christ the son of the Emperor of India, the Prince Mahindo, was transported to the summit of a lofty mountain in Ceylon to be the Apostle of Buddhism to the Cingalese. The mountain took its name from the Prince Mahindo, and is called Mihintale.

The Mihintale Mountain is so steep and abrupt as to be almost impossible for an ordinary human being to climb. We must, therefore, ascend by very ancient steps, which the ruling powers placed here some 2,000 years ago. The steps ascend 1,000 feet to the top of the mountain. There are 1,840 steps, divided into three flights.

Each step of the first, or bottom, flight is a granite slab, fifteen feet wide.

The third and last flight of 150 steps is cut into the solid rock—as we ascend this last flight let us note that, according to the Mahawansa, the King of Ceylon, Tissa by name, was miraculously drawn, while hunting to the summit of this mountain, and there met Mahindo. As a result of this meeting with Mahindo, King Tissa and his Queen, and 40,000 of his subjects, embraced the Buddhist faith.

Emerging from the steps, we find ourselves on the little plateau at the summit of Mihintale.

In the year 267 B.C. Mahindo, after preaching for forty years, retired to the summit of his mountain to die, and a Dagoba, known as the Ambustala Dagoba, was erected over his ashes.

It is said to stand on the exact spot where Tissa and Mahindo met. It is twenty-three feet in diameter, and is surrounded by fifty slender octagonal pillars with sculptured capitals, probably part of an adjoining shrine.

The seeming grassy hill rising in the background is a huge ruined Dagoba of wonderful antiquity. Buddha himself is believed to have visited this spot, and this great ruin, the Maha Seya Dagoba, is said to enshrine a single hair from Buddha's eyebrow!

It seems incredible that so vast a pile of brickwork, nearly 100 feet high, should have been considered necessary to enshrine and safeguard so minute an object as a single hair!

For 2,000 years has this dagoba defied the destructive tooth of time!

The trees on the summit are grown from seeds dropped by birds in their flight.

Mihintale is out of the regular path of tourists, and if you want to see it you must make an expedition on purpose.

I will now describe how I managed to get there.

I bought some cocoa-nut fibre rope, and with it lashed a chair, borrowed from the Government Rest House, to two stout bamboo poles, and was thus carried shoulder high by a party of ten natives, who took turns of four at a time. An old man was responsible for my safety. He bossed my bearers, and shouted orders to them in what seemed to my ears, voluble gibberish. He was the village joiner, and after paying up and dismissal I found that he had annexed my cocoa-nut fibre ropes!

He and the other men did the whole of the journey with bare feet.

But let us return to the Mahawansa story. King Tissa sent an embassy to the Emperor of India to request the gift of a branch of the sacred Bo-tree, under which Buddha sat when he attained Buddhahood.

The branch was sent, and was received with great state and ceremony. It was planted with great rejoicing in the sacred city of Anuradhapura 245 years B.C.—that is, 2,150 years ago.

The branch grew into a tree, which has been carefully tended, and honoured with magnificent ceremonies by successive dynasties.

It has been constantly guarded in its stone enclosure, in which are several images of Buddha.

Many of its broad leaves are to be seen lying on the ground. These fallen leaves are valued relics to the thousands of pilgrims who come here.

It is probably the oldest historical tree living. We found the only worshippers on the day of our visit to be the monkeys which had taken possession of the tree and its enclosure.

One day Mahindo said to King Tissa that they had no relic of the Buddha to which to make offerings, for, said he, "Wherever his relics are seen, Lord Buddha himself is seen."

So King Tissa sent a great embassy to his friend the Indian Emperor to beg that he would give the collar-bone of Buddha then in his possession for "the salvation of the land of Lanka," or Ceylon, King Tissa undertaking to build a "Thupa," or shrine, to contain the sacred collar-bone. King Tissa built the "Thuparama" Dagoba, which is charmingly situated in park-like land, in 307 B.C.; it is therefore more than 2,200 years old.

Of all the great Dagobas at Anuradhapura this Thuparama is the most ancient, and the most venerated, and repays a close inspection.

The Thuparama is placed on a circular brick platform, 160 feet in diameter. The platform is reached by two flights of broad stone steps. The rounded upright stones at the foot of each flight have carved upon them in high relief armed figures, or guardians, called "dwarpals." The sharpness and clearness of the carvings is wonderful indeed when you remember their extraordinary antiquity. The height of the Dagoba is 63 feet, and its

diameter 40 feet. It is solid brickwork, and is kept regularly painted, or whitewashed. And there is believed to repose Buddha's collar-bone!

The Dagoba is surrounded by a number of slender and very graceful monolith pillars, with carved capitals. The duty performed by those pillars is rather a puzzle to antiquarians. Some believe that they supported a roof which covered the whole Dagoba; others believe that from the pillars were suspended garlands and strings of lamps, always a chief feature of Buddhist ceremonial; while others think that the pillars were surmounted by emblematical figures.

Ferguson, in his handbook of architecture, says that the Thuparama "is older than any monument now existing on the Indian mainland."

When we remember that it was in its full magnificence 250 years before English history began with Julius Caesar, this Thuparama Dagoba is wonderful indeed.

King Tissa, not content with the Thuparama Dagoba, must needs still further show his piety by carving out of the solid rock a temple for 500 wealthy persons who had been ordained by Mahindo.

Because these persons were "isurumut," or wealthy, this rock-temple is called Isurumuniya.

This is the oldest rock-temple of Ceylon. We shall see a larger one, but this is the oldest, and I think the most picturesque.

Flights of steps lead to two terraces.

From the upper terrace we pass through a painfully modern entrance porch, with its red-tiled roof, into the ancient shrine in the heart of the rock. In that excavated temple is a large image of Buddha, carved out of the living rock.

The pond in the foreground is a "pokuna," or bath for ceremonial ablution. But it is now useless for that purpose because of the crocodiles which live in it, and which are fed by the priests. Notice the elephants carved out of the solid rock, and looking down into the pokuna. The elephant is a symbol of power and majesty.

The steps up to the shrine of the Isurumuniya Temple are very interesting, as the sculptures upon them and at their sides are in such splendid preservation, although 2,000 years have elapsed since they were carved—the side-stones with their scrolls, and the dwarf-pals, or entrance guardians.

These figures are repeated over and over again at Anuradhapura, at the entrance of every ancient Buddhist temple, monastery, and palace.

King Tissa's grandson, Dutthagamani, came to the throne 164 years B.C. But war was waged upon him by a powerful usurper.

After several indecisive battles, the two leaders finally met in single combat under the walls of Anuradhapura. Each, mounted on a huge elephant, charged the other. The usurper was defeated and slain, and Dutthagamani was hailed King on the battlefield.

Thereupon Dutthagamani determined to devote the rest of his life to acts of religion.

He first built the Loha Pasada, or Brazen Palace, for the accommodation of a colony of Buddhist monks.

That remarkable building rested on 1,600 monolithic columns of granite, which are now all that remains. The columns stand twelve feet high out of the ground, and are arranged in lines of forty each way. They were probably coated with chunam, or copper. The pillars carried a building nine storeys in height, containing a thousand dormitories. The roof of this vast building was sheet copper, or brass; hence the name "Brazen Palace."

But Dutthagamani erected a more enduring religious building—a huge Dagoba, a hill of solid brickwork, in the interior of which is enshrined a model Bo-tree of silver and gold, and a golden image of Buddha, as well as some other treasures. Originally the Dagoba was very much higher than it now is. It was of true bell-shape form, and pure white, being encrusted with a preparation of lime, coconut water, and the glutinous juice of the Para tree, and taking a polish nearly equal to marble. Such was the original magnificence of this Ruanweli (or Gold-dust) Dagoba, as it is called.

Dutthagamani commenced the building 161 years B.C., but he did not live to see it finished; it was therefore completed by his brother and successor, Saddha Tissa, 140 years B.C. The building occupied twenty-one years.

This Dagoba was greatly injured and shortened by the invading Malabars in the year 1214 of our era: still, its present height is 150 feet, with a diameter of 379 feet.

The trees with which it is covered are grown from stray seeds. The white lines along its surface are strings of prayer-flags.

The restored face of the brickwork might, perhaps, suggest a factory. It is, however, an integral part of the Dagoba.

Full details of the building and of its foundations—and these must have been good, for there is no subsiding—are given in the Mahawansa.

The Dagoba rises from a platform, paved with stone slabs, wide enough for an ambulatory.

On the ambulatory platform are four great altars at each of the four cardinal points of the compass. Each altar is ornamented with numerous heads of elephants, symbols of might and majesty.

On the same platform are some remarkable statues, which have been discovered during excavations. They are sculptured in dolomite. The four further statues are Buddhas, *i.e.*, persons who have lived lives of such holiness and sanctity that they attained Buddhahood. They are represented in robes folded just as the Buddhist priests wear their robes to-day.

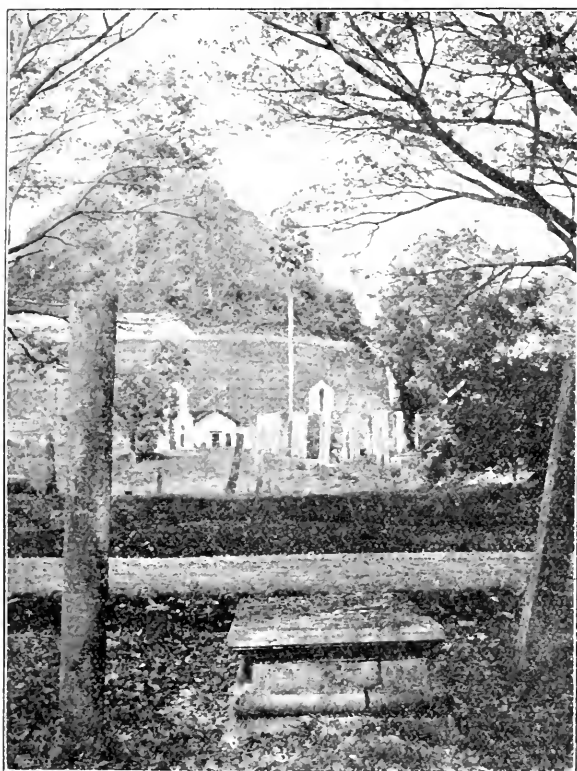
The nearest statue, ten feet high, wears no priestly robe—it is a kingly figure, the great monarch Dutthagamani himself—he who built the Brazen Palace and this huge Dagoba. Considering its great antiquity, some 2,000 years, it is a wonderful statue, and represents Dutthagamani as a man of great vigour and power. (See page 19.)

When Dutthagamani was dying, so the Mahawansa tells us, he was laid on this granite slab, so that his closing eyes might rest upon his last great work of piety, this great Ruanweli Dagoba. His attendants sought to solace him by an enumeration of his many pious acts, but he said to his favourite priest, who had been at his side in twenty-eight battles, "In times past, supported by thee, I engaged in battle; now,

single-handed. I have commenced my conflict with death. I shall not be allowed to overcome this antagonist."

And so Dutthagamani, one of the greatest of Ceylon's ancient kings, passed away, but his great work is still eloquent of him.

The pokuna, or bath, occurs almost as frequently as the shrine, or monastery, in this wonderful old Buddhist city of Anuradhapura, and they are all constructed on a commensurate scale (some of them measuring as much as 150 feet by 60 feet and 25 feet in depth). They were evidently for ceremonial use.



[E. W. M.]

ANURADHAPURA—RUANWELI DAGOBA AND DUTTHAGAMINI'S DEATH BED.

It is believed that the pokuna, known as the King's bath, was in remote times roofed over. Nowadays, it is not used as a bath at all, but as a tank for drinking water. Near was a boy with a full jar upon his shoulder, and one thus sees how in this interesting old place the natives supply their huts with water, where pipes and taps are not known, and, consequently, are not missed. The carved stonework of antiquity flanking the steps leading down to the pokuna should be noticed.

We are visiting the antiquities in chronological order, and now, coming down a hundred years, we find another huge Dagoba, the largest in Ceylon.

It was erected eighty-nine years B.C. by King Walagam Bahu, to commemorate the recovery of his throne after his expulsion of the Malabar invaders.

This Dagoba is called the "Abhayagiriya," which signifies "Mountain of Safety." It has a diameter of 360 feet, and covers an area of eight acres. Its height was originally 405 feet, 50 feet higher than St Paul's Cathedral, in London. I am told that it is possible to ascend to the interior of the pinnacle.

This Abhayagiriya Dagoba, a mass of solid brickwork, is, of its kind, the greatest monument in the world. Ruthless invaders and the hand of time have thrown down much of the brickwork. Beneath the débris are buried altars, statues, edifices. Here are two beautiful carved stones which excavations have revealed. Remember that the carvings are about 2,000 years old. We found a two-panelled stela from one of the altars. The upper panel has a male figure, the lower panel has a female figure, and it is interesting to note that she is wearing bangles, and perhaps not much else, thus showing the fashion of those remote ages. On the stone is carved a seven-headed cobra.

Now it is believed that once, when Buddha was absorbed in his devotions, an immense snake—a cobra—came and extended its hood over him as a protection from the tropic sun. The cobra, then, is a sacred snake to Buddhists.

The carving gives each of the seven heads a large hood. Notice, too, how well the carved stone reproduces the scaly skin of the snake.

Again, coming down another 400 years, we have the Jetawanarama Dagoba, the third of these huge Dagobas, and probably the most massive of them all—not so high as Abhayagiriya, but of the same diameter, viz., 360 feet—therefore, for its height, this Jetawanarama Dagoba has a more massive base.

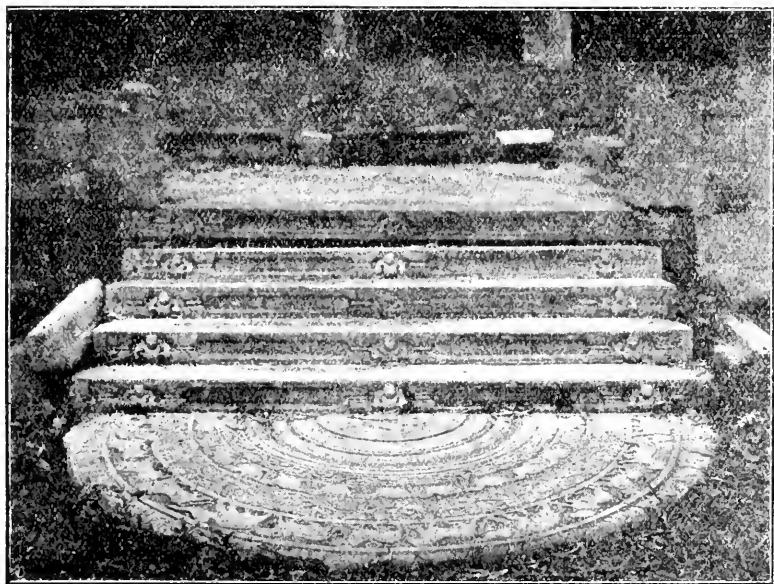
It was erected in the third century of our era by King Maha Sen, to mark his return to the Buddhist faith from the doctrines of the Schismatics.

The height of this Jetawanarama Dagoba to the top of the spire is 249 feet, and it contains upwards of twenty million cubic feet of brickwork. The mind can scarcely grasp this figure. Listen, then, to Sir Emerson Tennant's remarks on this Dagoba:—"Even with the facilities which modern invention supplies for economising labour, the building of such a mass would at present occupy 500 bricklayers from six to seven years, and involve an expenditure of at least a million sterling. The materials are sufficient to raise 8,000 houses, each with twenty feet frontage. They would line an ordinary railway tunnel twenty miles long, or form a wall one foot thick and ten feet high reaching from London to Edinburgh." Enormous trees have eaten their way into the brickwork, to the very summit, and to-day troops of grey "wanderoo" monkeys seem to be the only devotees who frequent this holy place.

The builder of the Jetawanarama Dagoba, King Maha Sen, built a magnificent palace, of which there only remains the entrance to the Central Pavilion. But those entrance steps are wonderfully perfect.

The carving is almost as clear and sharp as if it were fresh from the sculptor's chisel, yet 1,600 years have passed over it.

The semi-circular step at the foot is called a moonstone. It consists of a series of concentric fillets. The three innermost fillets represent the bud, the leaf, and the flower of the lotus, then a scroll of lilies, then a semi-circle of the sacred goose, each carrying a lotus bud in its beak, then a scroll of flowers and leaves, then a procession of elephants, horses, lions, and bulls. There are thirteen animals in the procession. There are thirteen new moons in the year—thirteen moons, thirteen animals—hence the name, Moonstone. The moonstones all have these thirteen animals.



ANURADHAPURA—MOON-STONE, MAHA SEN'S PAVILION.

[E.W.M.]

This moonstone is so beautiful, so perfect, and so venerable a relic of by-gone ages, that I should like the authorities to put a railing round it to protect it.

At present man and beast pass over it at will, and such traffic must tend to wear away the carving.

About half a mile away is another moonstone. The carving is not so perfect, but you may see that it has the same thirteen animals. The steps lead into a Vihare, or temple long gone, but the carving left on the side of the upright stone gives a suggestion of what the great buildings were like all these hundreds of years ago.

Now rapidly coming down through the centuries to a date about 500 years later than the Jetawanarama Dagoba, and the famous

moonstone, we find a colossal sedent Buddha. The attitude is that in which Buddha is believed to have reached the elimination of all things vile and human, or, as we might think it, to have reached annihilation; but as the faithful express it, the attitude in which the Lord Buddha attained Buddhahood.

The statue is a granite monolith, eight feet high, which means, of course, that if it had been standing on its feet, with the same proportions, it would have been about sixteen feet high.

For a thousand years has this Buddha thus been sitting by the side of a jungle road, watching the strange vicissitudes of Anuradhapura, an object of very deep veneration to pilgrims, who lay their offerings of temple flowers, the plumiera, on the small altar stone.

Close to the Sedent Buddha is the Lankarama Dagoba, which brings us down another 350 years, to the middle of the twelfth century of our era, to our Plantagenet times.

Of the ancient Dagobas of Anuradhapura this Lankarama is the youngest.

The Thuparama, the first we saw, is the oldest, being more than 2,000 years old. This Lankarama is not fully 800 years old, there being nearly 1,500 years between them.

You see, then, how we have skipped down the ages in visiting these ancient and very remarkable Buddhist shrines.

This Lankarama, though the smallest of them, is, in some respects, the most perfect.

The three circles of monolithic pillars remain, showing the extent of the former temple. The carved designs on the capitals of the pillars are still exquisite, notwithstanding their hoary age.

This is the last of these remarkable monuments which we visit, and in quitting them let me again quote Sir Emerson Tennant:—

“Such are the Dagobas of Anuradhapura—structures whose stupendous dimensions, and the waste and misapplication of labour lavished on them, are hardly outdone even in the instance of the Pyramids of Egypt.”

I have already related to you how King Walagam Bahu built the huge Abhayagiri Dagoba to commemorate the recovery of his kingdom from the Malabars.

During their invasion this King was forced to seek safety in flight, and to hide in dens and caves of the rocks.

When, after fifteen years, he regained his throne, he transformed many of these rocky caves into elaborate temples, the most notable among them being the Rock Temple of Dambulla.

The Rock of Dambulla, dark and formidable-looking, is so precipitous that there scarcely seems foothold for a goat, and, indeed, on this side it is almost inaccessible to man—an unlikely spot, you would say, for a temple. But if we wind round to the left for upwards of a mile, we find a place where we can ascend.

I found the climb over the smooth surface of the rock, under the tropic sun, rather tedious and toilsome, notwithstanding that I was arm-in-arm with a native guide.

The climb brought us to the entrances to the Temple caves, surrounded by the “Pansalas,” or priests’ dwellings.

We see here a priest holding one of the door-keys nearly two feet long.

See how the roofs have been recessed into the surface of the rock, which rises sheer overhead to a great height. The recessing is to protect the roof from the rains, which at times descend like a torrent.

Lighting our candles, the priest unlocks the door, and we pass into the Rock Temple of Dambulla. This great cave measures 160 feet by 50 feet. The greatest height is about 23 feet, the roof sloping downwards to the back of the cave, where it is only four feet high.

Burrows writes:—"The first impression is very striking, the coolness, the gloom, the circle of sedent Buddhas dimly visible by the candle-light, and the death-like silence, combine to produce a superstitious feeling which the true believers translate into reverence."

Notice the painted roof—a great sedent Buddha in glory, worshipped by the gods—above these, rows of Buddhas.

This cave contains no less than fifty-three statues, most of them exceeding life size.

We come to another sacred rock about twenty-two miles north of Dambulla, the last two and a half miles being through thick jungle, and across the bed of a river, a path so difficult that I had to be carried on men's shoulders—too rough a path for Mrs. Mellor to accompany me.

Here square abrupt rocks stand out boldly on the top of the hill.

Here, in this wild and secluded spot, is a Buddhist temple, not a cave-temple, but a temple roofless, and open to the sky. (See page 24.)

From one of the rocks an enormous upright figure of Buddha has been carved. It measures 33 feet 3 inches from its pedestal. The expression of the face and the *pose* of the figure suggest the idea of majesty and repose. Compare the colossal height of the Buddha with that of the Cingalese man, standing in the foreground; each of its feet is six feet long. This wonderful rock-carving is beautifully executed. The statue is only attached to the rock from which it is hewn by a narrow strip at the back. Every detail of the limbs, and the robe with its numerous folds, is sharp and accurate.

The Buddhist priests wear their yellow robes to-day draped and folded, just as their ancient carved Buddha does.

Notice the few prayer-flags waving from their sticks in front of the giant figure, the outpouring of some devout heart to its god in stone.

How feeble such acts of worship seem! But how well they illustrate the impotence of all things human with that which is sublime!

Thus has this graven image held its steadfast gaze towards the east and the rising sun while many centuries have rolled by.

Now, about 1,500 years ago, in A.D. 470, the King Dhatu Sen had two sons, Kāsya and Mogallāna. Kāsya, the eldest son, conspired against his father, and, raising the standard of rebellion, seized the King's person. Kāsya carried his royal father, stripped naked and in chains, to Anuradhapura, the capital, and there murdered him by building him up alive in the recess of a wall.

Mogallāna, the second son, fled to India out of his brother Kāsya's way.

But paricide proved an insecure foundation for dominion. Kāsya, rendered unpopular by his crimes, feared to live in the

open capital, and retired out into the distant jungle, to the great cylindrical rock of Sigiriya, which rises abruptly from the surrounding plain to a height of 400 feet. On the top of that rock Kāsyapa constructed a palace and a fortress, or citadel, of brick walls of enormous massiveness, considerable portions of which remain to this day. The warm red tone of the inaccessible rock of Sigiriya, the depth of its forest, the wonderful reflections of its lake, added to the strange history, combine to make this one of the most romantic and fascinating spots in beautiful Ceylon.



CEYLON—COLOSSAL ROCK BUDDHA.

[E. W. M.]

The monk who wrote the Mahawansa was a contemporary of Dhatu Sen and his parricide son, Kāsyapa; he therefore wrote and described what he saw. He writes that the perpendicular sides of the rock made them impossible to climb, and that Kāsyapa had a spiral gallery cut in the face of the rock, gradually rising from base to summit.

High above the gallery frescoes were painted, representing Queens and Princesses of Kāsyapa's Court making offerings at a neighbouring shrine. Throughout the frescoes the Queens and Princesses are arranged in pairs. Considering their antiquity, upwards of 1,400 years, the frescoes are in excellent preservation. It is a remarkable

fact that only three colours are used, yellow, red, and green. Blue seems to be entirely omitted, which is strange, as it was used for other painted work of this period.

Having climbed up the Sigiriya Rock in the late afternoon, we get from that great height, just as the sun is about to set, a wide-spreading view over some hundreds of square miles in Ceylon.

Stretching towards us from the distant hills is a wide expanse of cultivated land, rice fields, some tea and rubber plantations, and so forth. Then, coming nearer, is a large track of jungle and forest, within which lurk elephants, cheetabs, the deadly cobra, and many other wild creatures. From them I pick one example—wonderful little creatures which were living in the Ceylon of the ancients, and are living there to-day, and may, therefore, be said to link by-gone ages with the present.

These are the leaf-insects, known to the naturalist as “Phyllidae.”

They are a remarkable example of the way in which Nature affords safety and protection to her creatures by their environment.

These insects have so extraordinary a resemblance to the leaves and foliage which they inhabit, that they frequently escape detection, even by a practised eye. The bodies, wings, legs, and thighs of these insects accurately reproduce the colour, texture, and variation of the leaves which form their home.

From this they are sometimes called “walking leaves.” They are a marvellous work of an Almighty Creator.

We brought home from Ceylon a group of leaf-insects, and I took a colour photograph of them after arriving in England. I am sorry to say the insects have since come to grief, so I value the photograph. These insects are, of course, to be found in other tropical countries.

There is much, Ladies and Gentlemen, upon which time would not allow us to touch this evening, *e.g.*—

Who were the artists who designed, carried out, and wrought the sculpture of those very ancient shrines we have visited?

Where was the stone and brick brought from?

Then there is the commerce of Ceylon, also its flora and fauna, the bird-life in particular being very beautiful, and affording a large field of investigation.

Then, too, moths and butterflies are of immense variety and beauty.

I can only hope that what you have seen and heard to-night may induce you to take a deeper interest in Ceylon, our premier Crown Colony.

At all events, Ladies and Gentlemen, you will now have an idea of what manner of land it is when you next sing that verse of the old missionary hymn:—

“What though the spicy breezes
Blow soft o’er Ceylon’s isle,
Though every prospect pleases,
And only man is vile;
In vain with lavish kindness
The gifts of God are strown;
The heathen, in his blindness,
Bows down to wood and stone.”

THE PUNJAB AND ITS PEOPLE.

By Captain J. STEPHENSON, Indian Medical Service.

[Addressed to the Society in the Geographical Hall, Manchester, on Tuesday, January 23rd, 1906, at 7-30 p.m.]

THE Punjab lies at the upper apex of India, between the 28th and 35th parallels of latitude. Its capital town, Lahore, is on the same parallel as Jerusalem, Morocco, Charleston in the United States, and Shanghai, and a very little north of Cairo. The length of the Punjab is 550 miles, its greatest breadth about 600. On the west and north is the North-West Frontier Province, separated a year or two ago from the Punjab, and now possessing a separate administration of its own, under a Chief Commissioner, whose headquarters are at Peshawar. But since the Punjab to most people still continues to include the Frontier Province, and since I have myself spent at least as long a time on the Frontier as I have in what is now the Punjab, I propose, if you will allow me, to include some passing references to this area in what I have to say. The area, including the North-West Frontier Province and the various small native states comprised within it, is 150,000 square miles, or not far from three times as large as England and Wales.

Though thus of moderate size, the Punjab is a very small part of India. Peshawar is 1,500 miles from Bombay and 1,600 from Calcutta, or more than two days' continuous train journey from each—though neither Bombay nor Calcutta is by any means at the extremity of the Indian Continent. Let me just add, what is really very important, that, though part of India, the Punjab is not to be taken as representative of India as a whole. There is no one part of India which can in any way be taken as representative of India as a whole, and if there were, it would not be the Punjab.

From the point of view of physical geography, the Punjab is, speaking broadly, a plain. This is the outstanding feature—that it is one flat expanse, extending, still unbroken, to the south-west into the sandy wastes of Sind, to the south into the equally barren desert of Rajputana, and in the south-east into the fertile plains of the Ganges and its tributaries. One can go on and on for hundreds of miles, meeting hardly any perceptible rise or fall.

The plain, however, is bounded on two sides of its triangular extent by mountains; those on the north-east and north are some of the loftiest mountains in the world—the main chain of the Himalayas, whose summits reach far above the line of perpetual snow. These mountains are indeed the Punjab's most valuable—or rather invaluable and absolutely priceless—possessions; for without the mountains and their melting snows and the rains they condense there would be no rivers, and without the rivers no Punjab—or, at least, no Punjab as

we know it. The province is bounded on the north-west by another but a lower range, which has different names in different places, and divides it from Afghanistan.

The statement that the Punjab is a plain is not literally true throughout; there are a few ranges of hills which run across it, or partly across it, towards the north, but none of these ever rise at any place to a height of 5,000 feet above sea level—say, 4,000 above the level of the plain. The Salt range is the best known and most important of these.

But the glory of the Punjab is its rivers, the five rivers from which it takes its name. The earlier Aryan invaders counted seven; they reckoned the Indus as one, and in those days there was another to the south, which has since dried up and now can hardly be traced even by its bed. Later conquerors, not thinking they had really entered the land until they had crossed the Indus, reckoned only five, and called the country, in the Persian language, Panj-ab—the five waters. But, in any case, it is the rivers that have given it its name, and it is as the land of the five rivers that it is known through the world to-day.

The main line of rail to the north crosses them all in succession, and the bridges are, on an average, about a mile long—some more, some less. As favourable points have, of course, been selected for the bridges, we get some idea of the breadth of the rivers in flood; at other places than those where the bridges are it is often enough very much more than a mile. The country is flooded for large distances. This occurs in the hot months. The rivers begin to rise perceptibly about April, when some of the snow on the mountains begins to melt. It goes on through May, and through June; and in July, as a rule, or perhaps in August, the height of the flood is reached. This is due to the rains, which now come to swell the volume of melted snow; and though the rains go on till September the river has before then begun to fall. In the middle of the cold weather, and onward till March, however, the question one asks, on crossing the railway bridges in the train, is, "Where is the river?" There are miles of sands, and here and there a pool; there is in some parts a rough sort of vegetation, and perhaps a herd of cows are grazing about. Finally, one comes on the river, often close under one bank; often it seems not more than fifty yards across, and apparently not very deep either.

In their order, from above down, the five rivers are the Jhelum, Chenab, Ravi, Beas, and Sutlej. The Ravi and Beas I know only from crossing them in the train; the Jhelum, Chenab, and Sutlej I have seen each in various places and under varying conditions; but since it is the Indus I know the best, we will take it as a sort of type, and say a little more about it.

The adventurous traveller from this country usually crosses it at Attock, on his way to see Peshawar and the Khyber Pass. Here it is absolutely hemmed in by walls of rock, where it can only *rise* at flood time and not spread itself; it is comparatively narrow, and the current is proportionately strong. This has always been recognised as, on the whole, the most favourable place for passing the Indus, and is the one that has generally been used by invaders, from Alexander the Great

downwards. The conditions are similar at Khushalgarh, a little lower down, where a railway bridge is soon to replace the present bridge of boats.

Let us skip down to Dera Ismail Khan. The breadth of the river is here always considerable, and a bridge of boats—a row of boats at short intervals, with planks laid across them and bridging over the intervals—provides for traffic till about the middle of May, when the river is about a mile and a half across. After the middle of May the bridge is taken down and boats ply to and fro, the distance they have to go from side to side increasing every day as the river rises further. Take now a day in July, and come with me across the river. We will start at four in the morning, and go across express, with the mails. We drive down to the landing-place, about a mile from the military cantonment, and get into a large flat-bottomed boat with square ends, which shoves off, and the men start rowing. It is seventeen miles from Dera Ismail Khan to the railway station on the other side of the river, and practically the whole seventeen miles is the river Indus; all, indeed, except barely a mile at each end. Having got out some distance from land, if the wind favours, the men will put up a sail; then perhaps row again; then, passing an island, they get out and walk along the bank to tow us; if the current is running suitably at any place it may be enough to let the boat drift. To cut a long story short, we shall, oftener than not, be in time for the train at 2-30 in the afternoon. I fancy, though, that it is always necessary, in avoiding sandbanks, taking advantage of the wind, and so on, to do considerably more than the straight fifteen miles. Nine hours is the shortest I have done it in, and $13\frac{1}{2}$ the longest; though I own I have been fortunate, and at times people have been 24 hours in getting across, but that generally means they have been stuck on a sandbank. To say that one is for some time out of sight of land, will give some idea of what the river is. Perhaps I ought not to spoil this by saying that the river banks and country round hardly stand up at all above the water, and so are not easily seen at long distances, especially as a certain amount of hot weather haze is the rule on the horizon.

One day, I think, I shall always remember. The sun rose as we got on to the water, and what little coolness there had been in the dawn was over. Dera Ismail Khan is, according to thermometrical records (and, speaking from my own experience, I should be the last to quarrel with their accuracy), the hottest station of the Punjab. and 1898 was a hot year all over India. This was the end of June, and we shall see shortly what that means. I really do not wish to pile on the agony too much, but still it is within everybody's knowledge that the heat of a hot day affects one more on the water than on land—as evidenced, for example, by the way the skin may peel off one's face afterwards—and you must remember, too, that there is no shade on an open boat. We stuck on a sandbank, and I and His Majesty's mails missed the train. On getting up to Bhakkar, the village where the railway station is, I found there was no punkah in the waiting-room, no soda water, and no ice, while chair and table and everything inside felt absolutely hot on touching them. There was only one train each way in twenty-four hours. However, it was

impossible to wait so long in a hole like that, so I took the train in the opposite direction at half-past ten at night, and got round where I was going by a longer way.

However, let me not be unjust even to Bhakkar. Later in the year, in September, I was crossing one evening in the reverse direction. The breath of coolness in the air, the white mosque and the date-palms, the women filling their water jars and carrying them away to their homes, the children shouting and playing, the yellow sandhills and broad river made up a very pretty picture. I crossed to and fro nine times that year—seven by water all the way, and only twice by the bridge of boats.

So much, then, for the rivers of the Punjab; and this naturally leads me to say a few words about its irrigation canals—dependencies of the rivers one may call them—in which, indeed, the value of the rivers to the Punjab of to-day largely consists.

Besides a very large number of small canals of no great length which irrigate the land to a short distance on both sides of most of the great rivers, there are at least five much larger ones which carry water into the middle of the doabs—that is, the area included between two neighbouring rivers. The word “doab” is, like “punjab,” derived from the Persian, “do” meaning two, while “ab,” as before, means water; the compound thus means the land included between two waters. Each canal begins, of course, as a single large stream, from which branches soon arise, and these divide and sub-divide and sub-divide again, the terminal twigs of the tree being only tiny rivulets. Even the large parent stem would be unequal to providing water for all these at the same time, so the branches take the supply in turn for so many days, and in this way the whole area is adequately provided. The Jhelum canal comes off from the Jhelum, and waters a considerable portion of the area between the Jhelum and Chenab; similarly the Chenab canal in the next doab, one from Ravi between that river and the Sutlej, the great Sirhind canal from the Sutlej, and one from the Jumna, the boundary river between the Punjab and the United Provinces. The latest colossal project, which is just being begun, is the following; it depends on the fact that the Jhelum has still water to spare, while the land that now most urgently wants irrigating is south of the Ravi. A canal, to be called the Upper Jhelum canal, is to be constructed through Gujrat district, irrigating a portion of the country there, and discharging most of its water into the Chenab above the present origin of the Chenab canal. A similar canal will lead off from the Chenab high up, and will in great part empty itself into the Ravi; then the Ravi will be able to furnish the necessary water for another canal to irrigate the portion of the doab to the south not reached by the Bari Doab canal.

I can only just allude to the total transformation of millions of acres of country by means of these canals. Where previously the land was either altogether uncultivated, or dependent on uncertain and scanty showers for a poor harvest (precarious at that), the two yearly crops now come forth with unfailing regularity, and the miles of bare brown earth, with here and there patches of scrub which feed only a few camels or a handful of goats, have given place to a sea of yellow wheat, green sugar cane, maize, or white cotton at their

respective seasons. New villages every mile or two, new market towns, new railroads, a new population, have all been established, almost as by magic.

The way in which these new areas are colonised is the following: The land, such of it as is waste, belongs to the Government; a survey having been undertaken, it is marked out into "squares"—the "square" being the name of a definite area of a certain size. Colonisation officers, members of the Indian Civil Service, are appointed, and then the distribution of the squares begins. The squares of land are given free; the water is charged for according to the amount required by the agriculturists. Applications pour in from all and sundry, from every corner of the province, from all ranks. A certain amount of capital, enough to work the amount of land applied for, provide the necessary oxen, and pay for such menial labour as is required, is, of course, essential; then meritorious service for Government is taken into account, and the army of retired Government servants that spring up, of all grades and classes, is enormous; then well-behaved and well-affected private people are often successful in obtaining a grant; and there is always a whole army of petitioners whose fathers, uncles, grandfathers, wife's fathers, or ancestors of some kind were once in Government service, and hope that this may be considered a qualification for a grant. The charge for the water, though small, is in the aggregate sufficient to pay from 6 per cent to 12 per cent on the Government's capital outlay, of course, after providing for maintenance charges.

And now you will agree with me, I think, that the Punjab is rightly named from its rivers; and that without its rivers the Punjab would not be the Punjab—not *our* Punjab as it is to-day. Of course, there are always croakers. One man said to me, "Of course, the canals are fine things, but the men of the Punjab are degenerating under this new *régime*. Before, when the land was barren, the wells used to have to be a hundred feet deep to reach the water, and the men could pull up buckets from that depth even, with all that weight of rope, and were hardy and strong, could walk all day in the sun and never tire." Of course, in a way, there *is* probably some truth in it; anybody who did live in such inhospitable tracts *would* have to be exceptionally hardy—natural selection would see to that—or he wouldn't get a living out of it.

My only grudge against the canals is that they spoil the rivers. I told you there was some difficulty about finding them in the middle of their miles of sand sometimes; and though partly due, as I also told you, to the season, it is also very largely due to these canals having been taken off. I was at Rupar once, the head works of the great Sirhind canal, where it is taken off from the Sutlej just after it emerges from the lowest range of the Himalayas. The canal is splendid, but the river was left to trickle away into the west looking hardly larger than the Ribble. However, I floated down the canal that night and next day, and was in some measure compensated; if one river had been spoiled, another had been created.

I must close my description of the *land* with a short account of the climate; and, to take the best of it first, let us begin with the cold weather—with the beginning of the year. Perhaps I hardly need to

repeat what I said some time ago, that the Punjab is not synonymous with India; and nowhere does this apply with more force than in the matter of climate. I have tried to find a comparison to fit the Punjab cold weather, but have had to give it up. It has a delight which is quite its own; while the nights are cold, the days are crisp, fine, clear and sunny; the air is dry and exhilarating, and after the so-called Christmas rains, which may come on any time in January—seldom later—one may reckon on permanent fine weather for months. We have fires all day, and the nights may be cold, even as cold is reckoned here; but even in January the sun is just pleasantly warm at mid-day and overcoats are used only in the evenings; every Englishman resident in the Punjab knows how necessary they are then, for the great feature in the climate is the difference in temperature between the day and the night, sometimes indeed amounting to as much as close on 40 deg.

To illustrate what this means, I take from the daily paper of, say, January 13th, the maximum and minimum temperatures registered in London during the past twenty-four hours, 51 deg. and 48 deg., only 3 deg. difference. The previous day had been a mild one. Now, I suppose that at Gujrat, my last station in the Punjab, the minimum was much the same, probably a little less. But I am quite certain that it would have felt much colder, going out at 5 a.m. say, in Gujrat than it would have done in London, and still more so if it had been a question of taking a drive in an open dogcart. The reason, of course, is simple—that the air is much drier in the Punjab, and hence evaporation from the surface of the body much more rapid, so that the cooling effect of evaporation has to be added to the effect of the coolness of the air. But now, in the early afternoon, in Gujrat there would have been a pleasant shade temperature of 70 deg.—warm enough to sit outside in the verandah in comfort. Then, too, the drop in the temperature at sunset in London is quite inappreciable: but, supposing the sun set at half-past five in Gujrat in the latter days of January, the drop in temperature between 5 and 6 o'clock will probably be about 15 deg., and Anglo-Indians talk a good deal about chills taken just at this time.

March, of course, is hotter, and we give up fires, even at night, and towards the end of the month and early in April in the north we have our English fine, hot summer weather, still, however, tempered by cool nights, for there is always this fall of temperature after sunset.

May needs a word. About the middle of the month we put up the punkahs and arrange for daily supplies of ice. We shut up the houses for the greater part of the day, and open them when the evening cool comes on. It is usual to begin sleeping outside in the open, or on the roof, for the nights are often fairly pleasant still. Dust-storms begin. Every few days perhaps the day will suddenly grow dark: if one is outside one sees a huge dark bank coming rapidly down on one from some quarter or other; the usual stillness of the air is within a few seconds changed to a whirling cloud of dust. One must take shelter somewhere if possible—even a native hut is better than nothing. If there is nothing at all, the only thing is to get under the lee of a tree and shut one's eyes. One of the worst dust-storms I have have seen came on us once when we were driving. Fortunately, the

horses were fairly quiet under it, but it was impossible to do more than draw up to the side of the road and sit where we were. Another time I was under the shelter of a tree, when a large tree not far off crashed down, and a large branch of the tree next to me fell across the road. Inside, of course, it is like night, and all lamps have to be lighted. In the worst dust-storms one can hardly see one's hand in front of one, and while it lasts it is as black as the worst London fog. Of course, there are all degrees of severity; fortunately the worst ones are not very common. In the sandy tracts—*e.g.*, along the Indus—the dust-storm becomes rather a sand-storm. My wife and I were once, towards the beginning of the hot weather, making a tour in my district, and, having been marching for about ten days, were returning home by train, getting on at a wayside station in a rather remote part of my particular tract of country, and we just missed the train of the day before. There was only one in every twenty-four hours, and the explanation of its having been twenty-three hours late was that there had been a violent dust-storm or sand-storm further down the line near the Indus, and the sand had so drifted on to the rails for a considerable distance as to block the line.

In early June the actual temperature reaches its height; the heat is, I need not say, something altogether unknown in temperate climates. A maximum of 120 deg. or thereabouts in the shade is reached every year in the hotter stations; though, after all, there is not much difference between one place and another. In hot years as much as 125 deg. is registered. To go out in the middle of the day from a house which has been kept fairly cool is like suddenly facing a huge open furnace; but to men who are fairly strong it is by no means so uncomfortable as it sounds—at least, I will say, to myself personally. The skin perspires freely, but the air is, in May and early June, so intensely dry that the moisture is quickly evaporated, and though one feels warm, yet one often is not so, over the greater part of one's body, at all. Walking facing a hot wind—a so-called furnace blast—if one puts his hand into his shirt and feels his chest, it may feel marble cold, so great is the cooling effect of the rapid evaporation.

The daily maximum often begins to fall somewhat towards the end of June. But let no one be deceived into thinking that now his troubles are over; they are beginning. The air currents now come from the south and herald the advent of the monsoon, the rainy season. They bring moisture—not yet to be deposited as rain, however—enough only to take away utterly the dryness of the air and replace it by a dampness and mugginess which makes the heat far more unendurable. From now till the rains are well established—often not until the middle, or even end, of July—is the worst of the year. The nights are hot and muggy, too. The fall of temperature at sundown, by comparison with what it used to be, is so much less as to be hardly noticeable. I have often heard men aver that the temperature goes *up* at night—and so it feels. It never really does, however; but what fall there is brings the humidity more nearly to the saturation point, and so the mugginess and general discomfort are actually more pronounced. Many people sleep badly; in fact, refreshing sleep, even outside, may be almost impossible for anybody.

One awakes hot each morning again, with nothing but, as it seems, an interminable vista of such days to look forward to. Appetite often goes. The European drags himself about, but feels languid and washed out and tired of it all throughout the day. Nobody seems to have any energy. The temperature in the house is often from 95 deg. to 100 deg. I once had it 103 deg. in my room—and that at midnight, too, when, with windows and doors open, one might have expected a little coolness. It is difficult quite to describe what this means; but you know that a comfortable temperature for a room is 65 deg.; the difference, then, is considerably more *above* the usual room temperature than freezing-point is *below* it.

One could go on piling up the agony. But read, instead, Kipling's sketch called "The City of Dreadful Night" (a description of Lahore, the capital of the Punjab, on a hot-weather night), or the story called, I think, "At the End of the Passage." Both these will provide you with a sufficiency of horrors.

It depends on the amount of rain received as to whether the Punjab during August and half of September is simply a prolongation of the foregoing agony, or is somewhat improved. If rain falls in fair quantity and pretty regularly the temperature is so far reduced that, notwithstanding the moisture, the condition is on the whole materially improved. If little rain falls, the effect is merely to maintain the muggy, clammy, sticky, close feeling, with the heat almost as bad as before. The year before last was a very favourable sample indeed, and some August and September evenings, after rain, with the grass everywhere suddenly grown up green and tall, covering even the roads, the crops stretching away for miles, tall green maize and millet, taller and still greener sugar-cane, trees refreshed, natives all rejoicing in the prospect of a good harvest—one could almost think that India was a much-abused country, and there was nothing so terrible about it after all.

And towards the end of September the welcome coolness of the nights and early mornings comes again, and, though the days are hot, life is bearable once more—very bearable in comparison with what has gone. Punkahs are taken down at the end of the month or early in October—earlier in the north than in the south—and by degrees we once more reach the cold weather. The rains come to an end before September is over, and there is a season of bright, clear, dry weather till the end of the year. Of all the months of the year, November is perhaps the most enjoyable—perfect English summer days—and more delightful than February or March, because there is no thought of coming hot weather to oppress one.

But it is high time for me to come to the second division of my subject—the people of the Punjab. The population is about 28 millions, or something over 150 to the square mile. As the Punjab includes large areas of the border mountain tracts, and still comprises large waste tracts that have not yet been brought under cultivation, and many of which never can be, the fertile portions are comparatively thickly populated.

The classification of the population is done by means of the religions of the people, and the main distinction that has to be got hold of is that between Hindus and Mohammedans. There is no

term in general use to denote the population as a whole. It sounds natural to say that the inhabitants of India are the Hindus, but this is not the meaning of the word "Hindu." "Indians" would be the only word to denote them as a whole, but this is scarcely used. If one speaks of a *Hindu*, one means a man who is, at any rate nominally, an adherent of a certain religion, which we may call the Hindu religion, whose customs and social observances are different from those of other sects, and whose society is especially distinguished by the maintenance of the system of caste in all its rigidity. The Mohammedans are, of course, followers of Mohammed, who believe the Koran, perform certain religious observances peculiar to themselves, and observe the same code, rites, and ceremonies as the Arabs, Persians, Turks, etc. Mohammedan society has—originally and theoretically at any rate—no caste, and no caste rules and observances. Hindus form 37 per cent of the population, Mohammedans 55 per cent, the remainder being Sikhs, outcasts of various kinds, Parsees, Europeans, etc. Of some of these we shall have more to say. The Mohammedans, then, are the more numerous, and the Hindus form little more than a third of the population. This is in the Punjab only; taking India as a whole, Hindus are in the great majority.

At the risk of being a little tedious, I must still further accentuate this distinction between Hindus and Mohammedans. So important is it in the social life of the people, that very soon, if one comes into any sort of contact with the people, one begins to appreciate its significance, and before long one has acquired the mental attitude of the people themselves. Thus, if a man is mentioned, the first question, and the first classification of him, is as to whether he is a Hindu or Mohammedan. If one hears his name one knows immediately. Hindu names are Sanscrit, Mohammedan are Persian or Arabic, and it would be simply unthinkable for a Hindu to have an Arabic—*i.e.*, a Mohammedan—name, and *vice versa*. If one sees them, one can in an ordinary case tell immediately by clothes, or manner of cutting hair or beard; in many cases even their accent is distinctive. A Hindu, of course, will never eat with a Mohammedan, or a Mohammedan with a Hindu. Friendships between the two are rare; close friendships, I should say, almost unknown. And this is in strong contrast to the native's attitude towards his own co-religionists, and more especially towards those of his own caste, if he be a Hindu—or tribe or family, if he be a Mohammedan. This intense clannishness is one of the greatest obstacles in administration—this desire to shield, or to back up and help, those of their own family, or caste, or religion—and the feeling is, of course, stronger the narrower the circle; the claim of a caste-fellow, for example, would be stronger than that of a co-religionist of some other caste. Almost the last instance—an instance in a very minor way—with which I had to deal was with reference to a hospital assistant, in charge of a small Government hospital in my district, and his compounder, who was under his orders. The hospital assistant was a Hindu, the compounder a Mohammedan. They got on very badly together, and each made charges against the other, which I went out to try to settle. In this village was a wealthy and respectable native gentleman—in fact, he was the chief man in those parts—whom I knew personally, and liked.

He sent me an invitation to his house, to come and rest and have some tea. I went, and though I dislike native tea, drank it manfully. The conversation, of course, turned on the object of my visit, and this gentleman, who was a Mohammedan, was strenuous in praise of the compounder, who, he said, was very badly treated by the hospital assistant. The compounder was, he said, hard working, of good character, popular, and, so far as he could presume to judge, competent; the hospital assistant, of course, was the reverse. The point is that, while what he said of the hospital assistant in a bad sense was, I found, perfectly true, he had tried to mislead me utterly respecting his co-religionist, the compounder. He was not at the hospital when I arrived—there was his previous day's work undone, his dispensary vilely untidy—and, when he turned up in answer to my summons, he came in a very stupid condition with a huge black eye, the result of a brawl some little time previously. There were other things, too. The big man knew the village politics to the bottom, of course; yet he had tried his best to shield his fellow-Mohammedan, and had even wanted me to promise him, before any investigation, that he should not be punished.

It is, I confess, a little difficult to understand this separation—this more than separation—this antagonism, between the two divisions of the people. You know that the north of India was, a few centuries ago and down to fairly recent times, a Mohammedan empire, conquered originally by men of Turkish race, who came down from Central Asia. And it has been thought that the two peoples are racially different—the Mohammedans descended from the invaders, the Hindus from the original inhabitants. But the invaders were nothing like as many as the original inhabitants in numbers, while the Mohammedans of the Punjab are more numerous now than the Hindus, and the races have certainly not kept themselves so distinct in past times as now. To begin with, the conquerors began by freely marrying the women of the land, as usual in such cases. There is no doubt that the large majority of Mohammedans in the Punjab, and the majority of those elsewhere in India too, (notably in Bengal) owe their present religion to conversion—that is, to the conversion of their ancestors from Hinduism to Mohammedanism—in the centuries preceding the last. The antagonism, then, is not one of race. Further, it would seem that the vast majority of the inhabitants, whether Mohammedan or Hindu, hold their religious convictions much too lightly to make them the ground of an all-pervading factor in their lives—a factor which makes its presence felt from hour to hour through every day. The simple villagers certainly care much less about these things, but really the antagonism seems to have become, in the case of townspeople, a stereotyped sort of thing, and to be due nowadays to tradition and education more than anything else.

Beyond this there is very little that can truthfully be said in general terms of the people of the Punjab. It is not much good to try to generalise, even if we disregard, as we are doing at present, such distinct peoples as the Pathans of the frontier, the Dogras of the lower Himalayas, the Sikhs—who once were the masters of the whole Punjab—and aliens, who, like the Parsee and the Bengali, also find their way in some numbers to the Punjab. Englishmen, unless they

take a little trouble, sometimes do not succeed in knowing well the better classes of Indian society, and many people have come back to this country from India with ideas of its people drawn mostly from the servant class and the class of small shopkeepers in the bazaar—both, on the whole, unfavourable samples, from whom it is unfair to generalise. But perhaps one trait, which is, unfortunately fairly general, it may not be unjust to mention—that of a certain mental obliquity. In its mildest form it shows itself in the native gentleman who has some favour to ask—probably for a poor relative—who comes to see you, and talks for ten minutes or quarter of an hour—the usual length of an ordinary visit of courtesy—on general subjects. You know, however, that something is still to come, so, as if preparing to conclude the interview, you perhaps say, “Is there anything more?” when, with many apologies and deferential phrases, out it comes. Bluntness is absolutely abhorrent to most of them; in some cases it grows into lack of straightforwardness; an unwillingness to tell the whole of a tale straightforwardly; a desire, it might seem, to work in an atmosphere of mystery and intrigue and half lights and wire-pulling—to get somebody to speak to somebody else, with the idea of influencing some third person, usually an official—instead of going with a plain tale to the official himself in the first place. The countless times I have been asked, by persons who previously did not know me, for an introduction, or even some words of recommendation, to another official who was certainly no more unknown to them than I had been! Their absolute trust in “influence” and “recommendations” towards the obtaining of some appointment—their apparent total inability to see the impossibility, and the wrongness, of one’s recommending a person for a post for which he is quite unfitted! It is in their eyes a kindness, and a virtue, to do it—how can it be wrong? The times, too, that people have sought my acquaintance, and cultivated it for even months, before coming to the point—the point they had in their mind’s eye from the first day!

One may mention here, too, the universal system of “commissions.” Your cook charges you more for your provisions than he pays; your head servant buys a tin of kerosene oil in the bazaar, and similarly makes a few pence out of it. You think, perhaps, to escape by paying the shopkeeper direct, and so tell him to come at the month’s end and present his bill. It is absolutely to no purpose; you pay him the whole amount just the same, and if you watch him as he is going away you will see him in collusion with your servant, giving him the amount he would otherwise have obtained for himself. Even if the servant has nothing to do with the transaction, the effect is exactly the same. In the matter of the grain for your horses, for example, you call the grain merchant, any one you please, and give your instructions, and then personally pay the bill at the month’s end. The rates charged will, of course, be the usual bazaar rates, fixed every week by one of the civil officers of the district; but the syce—the native groom—pockets his perquisite all the same. All this is, of course, by no means unknown in this country, but it is not such a universally and openly recognised thing. It is not so very long since a servant of mine came to complain to me concerning a shopkeeper. I had given the servant the amount of the bill to pay over.

He had, as usual, offered the 90 per cent or so of the full amount, in exchange, as he thought, for the receipted bill which he would have brought back to me. For some reason or other there was a hitch; the shopkeeper refused to receipt the bill without receiving the *full* sum, and the servant came to complain, and to ask me to *make* the man give him his usual commission. And just as the lack of straightforwardness in speech slips by degrees into lying, so the system of "commissions" slips into bribery. But lying and bribery are not peculiar to any nation, and the only thing that need be noticed is that to Eastern nations in general bribery is not on the whole as abhorrent as it is to us. A judge who takes bribes is not, to the generality of the people, such a villain as he appears to us. The average standard of morality on this point is in India generally—for this does not apply with special force to the Punjab—lower than it is with us.

If, on the other hand, I were to say that the general standard of courtesy is higher, I should perhaps find it difficult to prove. That is, however, my very distinct impression. I know, in the first place, of course, that the languages of the East abound in words and titles of courtesy, and that the beginning of an ordinary native letter contains several lines of high-sounding terms and titles of endearment, which are largely a matter of form: that self-depreciation, too, before superiors or equals is common—so common as to have become a matter of form also, just like the other titles of honour. The ordinary native, of a grade above the menial class—not, perhaps, the real self-respecting gentleman—will positively weary you with flattery, not delicately conveyed, but laid on with a trowel. These things show nothing. Then there is to be taken into account the fact that the Government and the rulers and those in authority have almost always in the East obtained more respect, and even awe, than in the West: and a part of the courtesy one receives must be laid at the door of one's official position. But I have come in contact, more certainly than the majority of Englishmen in India, with the Punjabi villager, the simple and absolutely unlettered agriculturist, and I have not neglected either various opportunities of coming to know the real native gentleman, who wishes nothing from one, who has himself an independent position, and who has a family pride which keeps him self-respecting before the highest—and I cannot but think that, in their common intercourse with each other, as well as with Europeans—not in words only, but in graceful and kindly acts as well—the natives of the Punjab compare, class for class, by no means unfavourably with ourselves, while the village population, I am sure, have distinctly the advantage.

One subject I can hardly pass over altogether, and that is the position of women. And here, again, any general features that distinguish the people of the Punjab are just as much characteristic of Eastern nations at large; so very broad our lines have to be if we attempt to say anything in general terms, anything that shall be applicable, without innumerable reservations, to our proper subject. Beyond saying that the estimation in which women are held is lower than prevails in Europe or America, I must confine myself to the way in which this shows itself most noticeably—the general veiling and

seclusion of women. You know, of course, that this is common in the East. To find the origin of the custom we must go back to Arabia in the seventh century, when Mohammedanism had just been born. The Arabs before Mohammed knew nothing of the veil: their conquests soon after Mohammed's death, however, introduced them, rough desert dwellers as they were, to the luxurious and decaying civilisation of Persia, Egypt, and Syria, where kings and lords secluded their numerous concubines under the guardianship of eunuchs. The Arabs largely adopted the civilisation of their conquered subjects; they found they were now themselves great lords, and a passage in the Koran was adopted by them as a defence of the system of the harem. This became the general practice of Mohammedans, and they carried it with them wherever they carried their conquests. And so it came to India. And, say the Hindus, the Hindus themselves adopted it only because the Mohammedans had the custom—in self-defence, as it were—and partly perhaps because of Mohammedan tyranny. It certainly is no part of the Hindu religion, and I have never heard any other account of its adoption by the Hindus than that just mentioned. However that may be, there is practically little or no difference now between the two peoples. Not that the poor, of either sex, can carry it out; the villagers in general make little attempt to do so among themselves, scarcely more if a stranger comes along; the women will perhaps turn aside their faces for an instant, just as the poor among the townswomen will sometimes turn and face the wall while you pass, or pull the border of their head covering a little over one side of their faces. Indeed, what can they do when they have to be out shopping, or drawing water from the well, or helping to winnow the grain? In the next grade of society the woman usually goes out veiled in a "burqa"—one of those extinguisher-shaped things of white calico of which you have seen pictures—swathing the whole of the head and body and reaching to the feet all round, with eyelet holes covered in by muslin or net of some sort to see through. Still higher in society, women seldom go out at all, and when they do it is in a covered palki (or palankeen), a sort of litter, carried by means of poles by four men. Many of the highest classes are practically prisoners in their houses and grounds. That the custom, in these days of the "pax Britannica," is an anachronism, is admitted by many Hindus, and by all who are educated in the Western sense; as far as they are concerned, it is a mark of respectability which they dare not dispense with.

So much, then, for the bulk of the population. I can hardly do more than just mention, except in the case of the Sikhs, a few of the other peoples found in the Punjab, who go to make up the total; at present we have only accounted for about 92 per cent. The Pathans of the North-West Frontier Province are all Mohammedans, and so must be taken as already included; though, in truth, the difference between a Waziri from the Bannu border and his co-religionist, the peaceful agriculturist of the plains, is as extreme a difference as is to be found anywhere within the North of India. Europeans are about 2 per cent, mainly the soldiers of British regiments stationed in the various military cantonments; native Christians, 0.75 per cent. There are also a few Buddhists (mainly in the Himalayas) and a few Parsees.

The remaining 6·6 per cent are the Sikhs, about whom a few words in conclusion.

The Sikhs are a religious sect, of Hindu origin, who trace the foundation of their faith to a man called Nanak, an itinerant preacher who lived in the 15th century. On his death he appointed his successor, who was to be, as he had been himself, the centre of the disciples and the maintainer of the new religion—a religion which rejected the polytheism of the Hindus, taught the existence of one God, the abolition of caste, and the obligation of leading a pure life. Thus, in succession, ten gurus—that is, leaders—headed the faith, the last of them being Guru Govind Singh, who died in 1708. Guru Govind Singh refused to appoint a successor, saying that in their sacred book—a collection of hymns and spiritual sayings composed by many of his predecessors, in part also by himself—they should find all necessary light and leading. He encouraged them to arm against their Mohammedan oppressors, and meet tyranny by counter-force, and to him is largely due the Sikh tradition of themselves as a military race, which is still maintained. The Sikhs continued to exist as a religious and military organisation without any single head, but under a number of petty chiefs, till in the early part of last century, some time after the fall of the Mohammedan power, Ranjit Singh consolidated them again, under himself as their temporal head, and brought almost the whole Punjab under his sway. The disorder that again obtained on Ranjit Singh's death, and the ill-advised counsels that prevailed, led to the two Sikh wars, in which the Sikh soldiers fought with all, and more than all, their former bravery. The English slowly progressed towards victory and conquest; but fortune alternated, and when the battle of Chilianwala, in which the English lost 2,400 officers and men, besides four guns and the colours of three regiments, was claimed as a victory, the then Viceroy, Lord Dalhousie, exclaimed, "A few more such victories as this will lose us the Empire" (the Indian Empire). It was, in truth, essentially a defeat, and Lord Gough, the general in command, was ordered from England to give up the command; but before the orders could reach him he had fought and brilliantly won the battle of Gujrat, which finally gave the Punjab to England.

The two most distinctive characteristics of the Sikhs, to Europeans, are their rejection of the use of tobacco in any form, and their custom of never cutting or shaving their hair, whether of face or head. The long hair of their heads they coil up underneath their turbans, pinning it together by a wooden comb; it is usual also for them to twist up their long beards on each side of their faces just in front of their ears, so that it is held in place by the turban, underneath which the ends of the beard on each side are tucked. A Sikh is thus, as a rule, readily distinguishable, the long beard often marking him out even where the peculiar way of disposing of it is not adopted.

There is no need for me, in speaking to any body of Englishmen, to praise the loyalty of the Sikhs. Only eight years intervened between the conquest of the Punjab and the Indian Mutiny; but during the Mutiny the newly-raised Sikh regiments never wavered, and were indeed a tower of strength on the British side. Their bravery it is equally superfluous for me to dwell upon, whether in China, or in the

Soudan, or in our frontier wars, in which, time after time, the Sikhs have shown their prowess. The fate of the heroes of Saraghari is known and honoured wherever the history of our frontier campaigns is read; and no officer of the Indian Army will ever desire anything better than to go into action backed up by the Sikhs of the Punjab.

Well, gentlemen, such, roughly and in outline, is the Punjab, and such are its people. I wish I could have amplified further what I have said, and I wish especially I could have had time to illustrate it by, as it were, taking you with me on a tour over ground where I have often been, through the last district of which I had charge; and I had got together and arranged all my notes for this, which was to have been a third division of my paper, before I recognised that it was absolutely hopeless to attempt anything of the kind in the time.

Travellers are notoriously talkative, if anybody can be got to listen, and the exigencies of Government service have led to my, *volens volens*, doing a large amount of travelling up and down the Punjab. The conditions of life are very different now from what they were in the days of Sa'di, a mediæval poet of Persia, who was asked, concerning his travels, "And what, O Sa'di, was the greatest of the wonders that you saw upon your travels?" To which he replied, "Verily, the greatest of the wonders that I have seen was this, that I have come safe home again." But one can still see a glimmer of truth in two Arabic proverbs: "As safaru-s-saqar"—"Travel is travail," to keep the pun; or, more literally, "Travel is the fire of hell"—and that other one, "As safaru-z-zafar"—"Travel is victory," the victory over obstacles and difficulties. Of interest, at least, new lands, new sights, new customs, new people must always be, and—whether the place be the house roof on a hot night, with the jackals squealing below, or a piercing cold night on the frontier hills, when, on one of our little military expeditions, we sit huddled in great-coats round a camp fire; or wandering for days and weeks together in tents over the Punjab plains; or whether one be sleeping in the courtyard of a native serai, surrounded by grunting camels and their bales and their drivers, seventy miles from the nearest white man—the interest of the Punjab and one's affection for the land never fails, but always grows. The Arab poet says—

"And I know not, when bound for the land of my quest, if my fortune shall be
The good that I long for and seek, or the evil that seeketh for me"—

and in the same spirit, if not the same words, we all, however unavailingly, must needs question the future when we leave our early associations to wander forth; returning, we find, on looking back, that neither the good nor the evil has come unmixed: that evil has doubtless come, but that good has come too, and has surely reached us in much greater measure.

ROMAN REMAINS: THEIR WITNESS TO HISTORY.

By REV. S. HAILSTONE, M.A.

[Addressed to the Society in the Geographical Hall, on Tuesday,
February 20th, 1906, at 7-30 p.m.]

EVER since I accepted your kind invitation to lecture before your society I have been wondering at my temerity in choosing the subject of "Roman Remains: Their Witness to History." It is a common saying that "Fools rush in where angels fear to tread," and no doubt it is equally true that "Tourists rush in where *savants* fear to tread," and as it is said by Anglo-Indians that the longer you live in India the more you confess your ignorance of that country and its people, so those who know the Eternal City the best confess that they know it the least: therefore I must preface my remarks this evening by asking the indulgence of this scientific society if at the close I am judged to have left unsaid those things which I ought to have said—and the reverse.

First of all, I bear it in mind that this is a *geographical* society, and, as such, remind you that one of the chief elements in the making of Rome was its geographical position. At any rate, it was that which made it the centre in early days of the great empire which was formed around it, until its dominion became so world-wide as to suggest the substitution of other places as the seat of government under the later Emperors. If there be any truth in early legends, it was the situation of Rome which brought early Etruscan and Sabine settlers there and led the victors in each succeeding struggle to lay hold upon that particular spot and to become in turn *Roman people*. Its hills were well adapted for purposes of defence, its river gave easy communication with the sea. Its position in regard to Italy was central, so that we find Livy putting the following sentiments into the mouth of Camillus, the conqueror of Veii: "Not without good cause both God and man chose this place for the building of this city: most healthy and wholesome hills: a very convenient and commodious river, to bring in corn and other fruits out of the inland parts, to receive provision and other victuals from the sea-coasts: the sea itself near enough for commodities, and not exposed and open by too much nearness to the dangers of foreign navies: the very heart and centre of all Italy, a place, as a man would say, 'naturally made, and only for that city to grow and increase in.'" Thus, under the Emperor Trajan, Rome was, geographically speaking, the centre of gravity of the civilised world. You could measure equal distances from England to Rome and Rome to Jerusalem, or from Gibraltar to Rome and Rome to her Eastern extensions beyond the Danube: and all outlying quarters were brought into communication with the centre by means of the magnificent roads—triumphs of the engineering genius of her civilisation.

The excavations of the Forum, which have now been carried on for some years—at the present time under the superintendence of Commendatore Boni, who did me the honour, on my visit in 1904, of showing me his most recent “finds”—have yielded, and are yielding, most precious witness to ancient history. The picture now shown on the screen portrays for us a few of the most interesting memorials of the past; but only a few, for if we have walked along the “Via Sacra” from the Coliseum and the Arch of Constantine we have passed under the Arch of Titus and left behind us, on our right, the site of the Temple of Venus and Roma, containing two shrines—one to Venus and the other to Roma Æterna—designed by the Emperor Hadrian, who removed the Arch of Titus to its present site and destroyed the colossal Nero, the base of whose golden statue may still be seen close to the Coliseum. As we continued our walk along the Sacred Way, we marvelled at those gigantic ruins on our right of the Church or Basilica of Constantine—the three enormous arches, 60 feet in span, still remaining—and close by the circular temple erected by Maxentius in memory of his son Romulus, who died an infant. This temple is now a part of the Church of S. Cosmo e Damiano, as is also the Temple of the Sacred City. As we looked on our left hand the great Palatine Hill overshadowed us, with the bewildering remains on its summit of the magnificent palaces of the Emperors; while underneath, at the foot of the hill, was the House of the Vestals, of which much has been brought to light by recent excavations. The destruction of the buildings tenanted by the Vestal Virgins is due to Michael Angelo, who used the materials to a large extent in the building of S. Peter’s. In the Temple of Vesta has lately been found the shrine, enclosed by brick walls embedded in concrete masonry, and numerous remains of sacrificial victims have come to light—sheep, oxen, and pigs—with vases, coins, and other valuable relics.

The Vestals were of such great consequence in Rome that they were housed with comfort and even magnificence; their abode, which was built on the space created by cutting away the side of the Palatine Hill, resembling a cloistered building, constructed chiefly of marble, and adorned with statues of the Vestals. The outline of the small garden within the court still remains, and close by must have been the marble basin, which was kept filled with water probably from the Fountain of Egeria; while in the temple itself were guarded the most sacred relics in Rome, such as the Palladium—or some kind of figure of Pallas, said to have been brought from Troy by Æneas—the sceptre of Priam, possibly other significant objects, and, above all things, the Sacred Fire—the symbol of the prime necessity of life, for without *warmth* life is impossible—which suggests to our minds what was probably the earliest form of worship by the human race, viz., the sun.

As we resume our stroll, we pass the shrine and fountain of Juturna, while in front of us rise the three famous Corinthian columns belonging to an early restoration, in A.D. 7, of the Temple of Castor and Pollux. The fountain, or Lacus Juturnæ, was a square tank lined with marble. Herein were found an altar, with reliefs of Castor and Pollux, Diana, Jupiter and Leda, and in the 1901 excavations

abundant remains of bottles and jugs, testifying to the use of this purest of springs for medicinal purposes. Recently discovered, and the subject of much archæological discussion, is the early Christian Basilica close at hand. The date to which its erection should be assigned awaits definite solution, but in the mean time one can admire the beautiful remains of frescoes, mostly in the early Byzantine style, showing figures of the Saviour with saints, and Paul I. and other representations. Bending one's steps towards the right hand, in order to arrive at the scene which is before us on the screen, we pass the Temple and Rostra of Julius Cæsar, erected by Augustus to the memory of his great uncle, on the spot where the Dictator's body was burned by the populace, and we can also distinguish the bases of the great Arch of Augustus. I will ask my hearers now to imagine themselves planted on the left side of this picture, looking round on this crowded scene of ruin—irreverently called the "dust heap" by some of our friends who live on the other side of the "herring pond." On our left are the few stones which mark the site of the Basilica Julia, begun by Julius Cæsar and finished by Augustus, who dedicated it in honour of the sons of his daughter Julia. The building was used as a law court, and here Pliny the younger practised as an advocate and sometimes the Emperor Trajan presided. On the pavement may be seen many "*tabulæ lusoriæ*" or circular dice-tables cut in marble; and hundreds of dice, precisely similar to modern ones, have been found near at hand. The Basilica Julia was constructed in the form of a nave, flanked on each side and end with a double portico in two storeys. From its roof Caligula was wont, for his amusement, to throw money, knives, and other things into the Forum, to give a scramble to the populace. Then on the extreme right of the picture is the site of the Basilica Æmilia, so called after the family which, in the persons of several members of it, founded, built, or restored it. It was the Exchange of ancient Rome. Cicero, in one of his letters, expresses astonishment at its glory and magnificence in the restoration of 54 B.C.—Cæsar's rehabilitation of the Forum. The other basilica was then rising, and no doubt the two were intended to match—one the home of law, the other of commerce. Destroyed again in 14 B.C., it rose once more in greater grandeur than ever, at the expense of another member of the family, largely assisted by Augustus, until in A.D. 32 it became one of the most beautiful buildings in Rome, enriched by all the exquisite detail of the best period of Roman art.

In the recent excavations many discoveries have been made. We shall have noticed before this the fine arch which stands in front of us—that of Septimus Severus—erected by the Senate A.D. 203 in honour of that Emperor and his two sons, Caracalla and Geta. The arch is adorned with reliefs commemorating the victories of the Emperor in the East, and it is curious to observe the erasures made by Caracalla in the inscription after he had caused his brother Geta to be put to death, that part of the inscription which contained the word Geta having been obliterated.

These eight Ionic columns are part of the Temple of Saturn, once the god of the Capitol. Here Pompey sat surrounded by guards

listening to the orations which Cicero was delivering from the rostra, and received that personal appeal, "Te enim jam appello, et ea voce ut me exaudire possis." This Temple of Saturn originated the "Saturnalia," that feast of licence when (Seneca says) all Rome went mad.

We are now standing in the centre of the Forum Romanum, the most classical spot of ancient Rome. It is, after all, only a small space, and one must realise that many of these temples, by the scanty ruins of which we are surrounded, were little more than beautiful shrines. It seems impossible to define the exact extent of this place, and the work of identification of the various buildings is made more difficult, not only by the succession of calamities, such as fire, earthquake, and the ravages of the enemy, but by the fact that the original level of the ancient soil lies 24 feet below that of to-day. Its origin goes back to the alliance of the Romans and Sabines, and was a mere marshy spot of neutral ground used as a meeting-place.

Close to us, on our right, is the recently-discovered base of the shrine of Venus Cloacina, the Goddess of Purification, placed, suitably enough, almost directly above the Cloaca Maxima.

Then, still further to our right—now the Church of S. Adriano—we recognise the site of the Curia or Senate House. Here was the Hall of Assembly in which the destinies of the world were controlled—built and rebuilt over and over again. In 1900 the pavement of the inner hall was laid bare, and, as Lanciani says, "When we think that these very marble slabs have been trodden by all the 'viri clarissimi' who took a share in the political life of Rome from the beginning of the fourth to the middle of the sixth century, who witnessed the agony and the lingering death of the queen of the world, who fought the great battles between Christianity and polytheism; when we consider that these very steps were ascended and their very threshold crossed by S. Ambrose and Symmachus, by King Theodoric and Cassiodorus (and by all the illustrious figures of history), we cannot help being impressed."

A most interesting discovery was made by Commendatore Boni during the progress of the excavation in the shape of the *Niger Lapis*, a black marble pavement of slabs nine inches thick—slabs which probably came from the Pyrenees. It is thought that this was one of the most holy spots in Rome—possibly identified by the ancients with the grave of Romulus, which, Varro tells us, was adorned by two sculptured lions. Further digging revealed beneath the pavement a base of tufo, having two parallel pedestals in the Etruscan style, a cone of tufogiallo (symbol of a presiding god), a "stela" (inscribed in archaic language, giving laws relating to sacrifice), and then the base of a large altar—all of which remains were enveloped in sacrificial objects carefully disposed, such as beads, amphoræ, statuettes, etc. Thus was fixed, quite within recent times, the political centre of ancient Rome.

Now let us direct our eyes to that great building which dominates the Forum as we look to the north-west, and, as we do so, the Column of Phocas crosses the line of vision. This is Byron's "nameless column with a buried base"; no longer an accurate description since the unearthing of its pedestal. It is a monument of the fourth century,

replaced by this to Phocas, the Byzantine Emperor, in the year 600. At the foot of this side of the Capitoline Hill, just behind the Arch of Severus, is the Temple of Concord, founded in 367 B.C.; in front of us, the Temple of Vespasian, A.D. 94; and, further to the left, the Porticus Deorum Consentium, a row of columns in front of a set of small chambers called the School of Xanthus, used by scribes and other officials. Beneath the large edifice, crowned by the beautiful tower, are the remains of the ancient tabularium, dating perhaps from about 85 B.C. This building had three entrances (one still remaining) by which the visitor enters on a climb of sixty-five steps cut in the Capitoline rock, and reaches the hall above, now a part of the Museum.

With this rapid survey of the greatest classical spot in the world, and having gathered a few testimonies to the history of ancient Rome, it behoves us, in our limited time, to turn our attention elsewhere, having taken before we leave a backward glance, and taking a route by the Sacred Way through the Arch of Titus towards the Coliseum. On the screen is now shown what is thought by some to be the most beautiful relic of its kind in Rome. Its building is due to Domitian, who erected it to the glory of his brother Titus after the capture of Jerusalem. It is of peculiar interest to Christians of all times, and not less abhorrent to Jews, who at one time purchased the liberty of not having to pass beneath it. As we all know, this is due to the *bas-reliefs*, which represent the conqueror bringing back among his spoils the most sacred objects of the Temple of Jerusalem. The sculpture, much mutilated, represents clearly enough the seven-branched candlestick, borne aloft on the shoulders of men in the triumphal procession of Titus.

The Coliseum now looms large in the foreground, and, well known though the form of it, and even the history of it, may be to my audience, we could not consider "Roman Remains" without a reference to it. But on our way—more or less—we must stop to admire the arch dedicated by the Senate and people of Rome to the Emperor Constantine after his victory over Maxentius at the Milvian Bridge—now the Ponte Molle. Verily the most noticeable point is the insertion of the words, "By the inspiration of God," in the inscription. Whether this phrase was intended to harmonise with the new profession of faith of the first Christian Emperor, or whether it was ambiguous so as to fit either the old faith or the new, is an open question. This side of the arch shows us the upper reliefs referring to scenes in the life of the Emperor Trajan: the lower, which are very much inferior, referring to Constantine: and the eight columns, seven of which are of the original giallo antico, the eighth having been taken to S. John Lateran by Clement VIII. and replaced by one of ordinary stone.

We will now pause for a moment on the north side of this arch, and consider the Coliseum. This cone of brickwork represents the remains of the Meta Sudans, a fountain which was resorted to by the lower classes, who came from far and near to attend the shows in the great Flavian amphitheatre. On the north or north-east side of the great building we can see the four storeys of which it was originally composed, the whole forming a gigantic ellipse measuring externally 1,790 feet, with a length of 620 feet, a width of 525 feet, and

a height of 157 feet, and capable of accommodating about 50,000 spectators. After the glories of Nero's golden house had vanished Vespasian began this wonderful building, laying its foundations on the site of Nero's fish pond. Titus finished it, and inaugurated it with a show, in which (Merivale says) some of the principal excitements were battles of cranes, with dwarfs representing pigmies; gladiatorial combats, in which even women took part; and (water being let into the arena) a sea-fight representing the combats of the Corinthians and Coreyreans related by Thucydides. The subsequent history of the Coliseum is, first, the record of ever-increasing slaughter of beasts and men, to satisfy the thirsty lust for blood on the part of the debased onlookers, culminating in the *finale* to the gladiators' fight through the action of Telemachus, the Eastern monk (who, however, was stoned to death for his interference), in one of the best-authenticated martyrdoms in the person of S. Ignatius, Bishop of Antioch, the disciple of S. John and companion of S. Polycarp, and by tradition the child specially blessed by our Saviour. He was devoured by lions let loose from the subterranean cages constructed for the animals who were to be used in the shows, and he died with these well-known words on his lips, "I am as the grain of the field, and must be ground by the teeth of the lions, that I may become bread fit for His (*i.e.*, God's) table." Until 1872 the memory of the Christians who were here roasted alive, torn to pieces by wild beasts, or beheaded was preserved by a tall cross erected on the spot of their martyrdom, and yearly the Via Crucis procession was held, and sermons preached. In the Middle Ages the Coliseum was included in the great Frangipani fortress which sheltered Pope Innocent II. from the anti-Pope Anacletus II., and a portion of it was afterwards used as a hospital, as a meeting-place for those who practised the black art, and as a stone quarry. Its name is variously derived from Colossus alluding to its size, or from a colossal statue near by, and is first found in the writing of the Venerable Bede, quoting the words of Anglo-Saxon pilgrims:—

"While stands the Coliseum, Rome shall stand,
When falls the Coliseum, Rome shall fall,
And when Rome falls, the world."

Comparatively little is left of the magnificence of ancient Rome. We can soon run through the catalogue of notable instances; the arches of Titus, Constantine, and Septimius Severus; the Baths of Caracalla; the Pantheon; the palaces on the Palatine Hill; the Mausoleum of Hadrian; the columns of Trajan and Marcus Aurelius; the equestrian statue of Marcus Aurelius; the round temple in the Piazza Bocca della Verità; some ruins of aqueducts; two or three gates in the Aurelian walls; and, of course, the basilica of Constantine in the Forum. It would clearly be far beyond the scope of this lecture to furnish the audience with a description of all, and the most noteworthy are therefore selected.

We will now throw some pictures on the screen—first, of Hadrian's Mausoleum; second, of the beautiful little temple in the Piazza Bocca della Verità; and lastly, as a connecting link between classical and mediæval Rome, the Pantheon. We approach the mausoleum by the

Pons Ælius of Hadrian—now the Ponte S. Angelo—a bridge over the yellow waters of the Tiber, constructed as an approach to the tomb. As we pass on to the bridge, over which the mortal remains of at least six of the Roman Emperors have been borne, we notice the statues of S. Peter and S. Paul erected at its extremity by Pope Clement VII., and the fluttering angels, which have been called the “breezy maniacs of Bernini,” and we are face to face with the huge, and in its present condition almost unsightly, mausoleum, or fortress, or castle, according to the historical period with which our thoughts are for the time occupied. In A.D. 130 Hadrian built it for his tomb, and in its finished condition it must have been a glorious thing to behold. It consisted of three storeys of Parian marble, adorned with Doric, Ionic, and Corinthian columns, surmounted with statues of men and horses. It served as the sepulchre of Hadrian’s adopted son, Ælius Verus (who predeceased him), Hadrian himself, Antoninus Pius, Marcus Aurelius, Commodus, Septimus Severus, and Caracalla in A.D. 217.

In the Middle Ages the history of Rome centred on this spot. The Goths, under Alaric, made their way into it. In 536 it was besieged by Vitiges, when the garrison threw down the statues and blocks of marble on the besiegers. It figures largely in the contest between Totila and Belisarius. Its present name, “The Castle of S. Angelo,” brings to our imagination the penitential procession, in time of pestilence, organised and led by Pope Gregory the Great, who, when crossing the bridge and plague-stricken people were falling round him, saw a vision of an angel, high up in the blue sky of Rome, sheathing his sword. Ten or twenty years later Boniface IV. built a chapel on the summit dedicated to the archangel Michael, and a hundred years or more afterwards the chapel was destroyed and a colossal wooden angel took its place, which in its turn was succeeded by the present angel of bronze. Every form of human villainy has been transacted within the walls, including the murder of two Popes—Benedict VI. in 972 and John XIV. in 984—and, in fact, the mediæval history of the Castle of S. Angelo is steeped in crime.

This graceful little building with its Corinthian columns was formerly known as the Temple of Vesta—it stands in the place called the Bocca della Verità—because of the curious old mask which can be seen in the church close by, of which the mouth closed upon the hands of perjurers and liars. Here is a beautiful fountain, erected by Clement XI. in about 1718, now modernised, and therefore injured, as indeed the whole of this quarter of Rome has been, by the hideous modern buildings, like so many boxes, which were erected in the building mania which attacked Roman people after the unification of Italy, when, in fact, modern Rome was to be a second Paris. This temple is in reality that of Mater Matuta, goddess of Dawn, and has been dedicated as a church, with the title of S. Maria del Sole. It will now be convenient, I think, as we pass from Rome Pagan to Rome Christian, to consider the most perfect Pagan building in the city, which has transferred its allegiance from the divinities of the old world and become a great Christian temple.

Here before us we have the Pantheon, carrying us back to the year 27 B.C., when it was built by M. Agrippa, as the inscription on the

frieze informs us, though it has undergone various rebuildings and restorations since that early period. The Pantheon can claim the worship of the human race for such a long period that it may be called unique. Christian altars and Christian rites succeeded to Pagan worship when the building was consecrated by Pope Boniface IV. in 608. It is a rotunda, covered by a dome, in the centre of which is the aperture which alone lights the interior, through which the rain falls and the sun shines, suggesting to persons of imagination the prayers and vows of the faithful ascending to the heights of heaven unimpeded. S. Maria Rotonda, the present name of the Pantheon, is the Royal burying-place, and here lie the remains of Victor Emmanuel II. and the martyred King Humbert.

Following a quasi-historical method, and so deriving a justification for the title of this address as a "witness to history," we now take the road from the Coliseum to the Lateran, and enter the very early church of San Clemente, dear to the student of primitive ecclesiastical architecture: for among the four or five hundred churches of Rome there is not one, with perhaps the exception of S. Maria Antiqua, which is so rich in the details of Christian worship as this of San Clemente. Here we are standing upon a spot consecrated by the memory of one who was a companion of S. Paul—and, indeed, on the site of his family residence. You can see in this picture the earliest—and, to my mind, the best—arrangement for those who render the musical portions of the sacred services, called the *schola cantorum*. The railed-in space is in the centre of the nave of nine bays, with its sixteen columns evidently taken from pagan buildings. All this part of the church was taken from a lower church dating from a period prior by many years to the twelfth century, the date of the upper church. Beyond the *schola cantorum* in the raised chancel are the altar and an episcopal throne, and underneath the altar are the remains of S. Ignatius, martyred in the Coliseum. Below is the lower church, unearthed in 1857 by Father Mullooly, to his lasting credit, for at that time little interest was taken in archaeology by the Roman authorities. Here are early frescoes in almost perfect preservation, and pillars of rare marble. Still more strange is the third structure beneath this lower church, which may very well have been the house of Clement. Here is the quaint canopied porch leading into the *quadriporticus* from which the rear of the church is entered.

At this point I must confess that the magnitude of my subject begins to weigh heavily, and I am conscious that this address is becoming too much of a guide-book description of the wonders of the Eternal City. But those of my audience who know Rome best will be the most lenient, and will bear with me while I exhibit a few pictures of some of the famous basilicas, before we arrive at the period of Michael Angelo, and observe his work in the Campidoglio, S. Peter's, and the Vatican.

The history of the Lateran buildings is a long and intricate one. The site of the present church was originally occupied by the palace of the family of Lateranus, put to death by order of Nero at the same time as Seneca, his former tutor. Marcus Aurelius was born here, and it became an Imperial Palace until the time of Constantine, who, in the ardour of his new faith, granted it to the Bishop of Rome

(Sylvester) and founded the church. Here the Popes resided until 1308, when they left for Avignon. This interior is the baptistery, in the font of which it is said, but erroneously, that Constantine was baptised; with greater truth it may be added that Rienzi bathed in it before his public appearance as resuscitator of the ancient glories of Rome. Passing along the Piazza di San Giovanni, and noticing the oldest object in Rome, the Egyptian obelisk brought from Heliopolis by Constantine, and originally in the Circus Maximus, we arrive at the imposing *façade* which is one of the objects in the skyline from most of the heights generally visited for "bird's-eye" views. The *façade* has indeed at a distance a fine effect; its enormous statues, perhaps too large for effect at close quarters, proclaim at once the dignity of the church which more than any other has been the scene of the great events in Papal history. Here came S. Francis of Assisi with his unkempt and ragged brothers to meet the imperial pomp of Pope Innocent III., craving sanction for the new Order. Here two great figures of ecclesiastical history met for the first time—S. Dominic and S. Francis. Here, in the Palace hard by, the Popes lived for 1,000 years. Here five General Councils were held—and, did time permit, the witness to history borne by this pile of buildings might be greatly prolonged. Ancient Rome has here contributed to Christian Rome in the shape of the central bronze doors under the grand portico; for they were brought from the Curia or Senate House and placed here by Pope Alexander VII. The effect of the interior is quite disappointing. It is true that the church has been rebuilt at least four times, and that few stones, if any, of the work of Constantine—at which it is said he laboured with his own hands—remain; but the basilica has undergone incessant modern mutilations under Borromini, and the great blocks encased in marble and adorned with figures really contain two of the ancient columns. The tabernacle, erected over an altar which encases the wooden table said to have been used by S. Peter in the house of Pudens for celebrating Mass, is a Gothic structure of the fourteenth century, and here are preserved the skulls of S. Peter and S. Paul.

The famous mosaic in the choir beyond represents a vision of the Saviour blessing the work of Constantine—harts panting for the water brooks are, of course, the Saviour's disciples. On the left, the Blessed Virgin Mary blessing Pope Nicolas IV., S. Peter, and S. Paul with scrolls; on the right, S. John the Baptist, S. John the Evangelist, and S. Andrew. Here on this throne the Popes were installed; for, as Dean Stanley says, "In the Lateran is the true Pontifical throne. on the platform of which are written the words, 'Hæc est papalis sedes et pontificalis.'" Over the great church's front is inscribed the decree, Papal and Imperial, declaring it to be the mother and mistress of all churches.

Far more beautiful in its present state is the Basilica of S. Maria Maggiore, originally founded in A.D. 322 to commemorate a miraculous fall of snow which covered this spot and no other on the 5th August; and hence annually commemorated by the dropping of white rose leaves during High Mass in the Borghese Chapel. The rebuilding of this church was undertaken after the Council of Ephesus,

which condemned the Nestorian heresy, and it was therefore dedicated to S. Maria Mater Dei, and established as a basilica, with a Porta Santa only opened by the Pope four times in a hundred years. As we approach the entrance we pass by a magnificent column, formerly a part of the Basilica of Constantine in the Forum, and we observe, as we enter, a statue of Philip IV. of Spain, who gave great treasures to the church; as did also Ferdinand and Isabella, who presented the gold for the roof of the nave.

This glorious interior—culminating in the beautiful baldacchino erected by Benedict XIV. in 1741, supported by porphyry columns entwined by gilt leaves—is surely the perfection of the Italian church. Forty-two columns of fine marble from Greece, mounted by a frieze of pictures in mosaic, support a lovely ceiling in golden panels. Amid a cloud of witness borne by this church to mediæval history I will give you only one instance, and it shall be detailed in words better than my own: “On Christmas Eve, 1075, the city of Rome was visited by a terrible tempest. Darkness brooded over the land, and the trembling spectators believed that the day of final judgment was about to dawn. In this war of the elements, however, two processions were seen advancing to the Church of S. Maria Maggiore. At the head of one was the aged Hildebrand, conducting a few priests to worship at the shrine of the Mother of God. The other was preceded by Cencius, a Roman noble. At each pause in the tempest might be heard the hallelujahs of the worshippers, or the voice of the Pontiff pouring out benedictions on the little flock which knelt before him, when Cencius grasped his person, and some yet more daring ruffian inflicted a wound on his forehead. Bound with cords, stripped of his sacred vestments, beaten, and subjected to the basest indignities, the venerable minister of Christ was carried to a fortified mansion within the walls of the city, again to be removed at daybreak to exile or death. Women were there, with women’s sympathy and kindly offices, but they were rudely put aside, and a drawn sword was already aimed at the Pontiff’s bosom, when the cries of a fierce multitude threatening to burn or batter down the house arrested the aim of the assassin. An arrow discharged from below reached and slew him. The walls rocked beneath the strokes of the maddened populace, and Cencius, falling at his prisoner’s feet, became himself a suppliant for pardon and life. In profound silence, and with undisturbed serenity, Hildebrand had thus far submitted to their indignities. The occasional raising of his eyes towards heaven alone indicated his consciousness of them; but to the supplication of his prostrate enemy he returned an instant and calm assurance of forgiveness. He rescued Cencius from the besiegers, and returned to complete the interrupted solemnities of S. Maria Maggiore.”

As the sovereigns of Spain were protectors of the Basilica of S. Maria Maggiore, so also, before the Reformation, were the English kings, of the church which we will now visit, S. Paul outside the walls. It is quite in the nature of a pilgrimage to get there, and once outside the Gate of S. Paul we travel along the road by which that apostle and S. Peter are said to have gone to their martyrdom. Half way is a humble chapel, inscribed with these words, “In this place SS. Peter and Paul separated on their way to martyrdom. And

Paul said to Peter, 'Peace be with thee, Foundation of the Church, Shepherd of the Flock of Christ.' And Peter said to Paul, 'Go in peace. Preacher of good tidings, and Guide of the Salvation of the Just.' Passing for the moment this Basilica, we ought to travel along the lane which leads to the Tre Fontane, the scene of the execution of the Apostle Paul. Here, in a dismal, malarious, and swampy compound, are three small churches, and a house for a few monks; one of the churches containing the three fountains which sprang out of the ground—according to the legend—at the three bumps which the head of the apostle made after it was severed from his body.

As we return to visit the modern Basilica—for, after the great fire in 1823, which left but few relics of the original building, the church was rebuilt, and opened by Pius IX. in 1854—we cannot but recall the legend of Plautilla, which weaved itself into the mind and belief of Christendom in early days. She was a Roman lady who hung upon the lips of the apostle, and, weeping, took her place by the roadside as he passed to execution. She wore a veil, which the apostle requested her to lend to him to blind his eyes, promising that he would return it after his death. She did so, and was astounded afterwards to receive again the veil stained with the apostle's blood.

This picture represents the imposing interior of S. Paolo, with its great nave (290 feet long) and its four lines of columns, with a cornice of mosaics with medallions of the Popes. The arch which separates the nave from the transept is a relic of the old basilica, and has important mosaics by Galla Placidia, sister of the Emperor Honorius in 440.

This is the Gothic altar and canopy erected in 1280, with its fine column of red porphyry: and here may be seen and observed, as recalling another phase of sixteenth century history, the medallion of the Madonna, before which Ignatius Loyola with five companions made their vows in 1541, and set on foot the militant Society of Jesus.

A hasty glance at the interior of S. Maria Sopra Minerva will complete our recollections of Rome before we approach the sixteenth century and enter into the work of Michael Angelo, Raffaele, and the great artists of their age. This is the only important *Gothic* church of Rome, built on the ruins of a temple of Minerva. It is very interesting by reason of its relics of art and history. Here, beneath the high altar, lie the remains of S. Catherine of Siena, born in 1347, and dedicated, at her own desire, from her earliest days to a life of absolute denial of the world and devotion to religion. Here in the choir are the tombs of two famous Popes, Leo X. and Clement VII., both of the Medici family, the former, son of Lorenzo the Magnificent, during whose reign artists and poets flourished under his gay régime, amongst them being Raffaele. Near at hand is the Dominican monastery where Bruno was condemned by the Inquisition and Galileo escaped by recantation.

That great Pope, Sixtus V., had much to do with the rebuilding of Rome in his day. It was he who raised this obelisk in the magnificent Piazza of S. Peter's—an obelisk which witnessed the martyrdom of S. Peter and the horrible cruelties practised on the Christians by the Emperor Nero. It had been lying half-buried in

the earth, when the Pope conceived the idea of raising it to its present position. It was considered an impossible task, but a young man, Domenico Fontana by name, undertook the task, and just before the work commenced he begged a blessing from his master the Pope, who granted his prayer, but also hinted that failure would be expiated by death. Amidst the breathless silence of the crowds assembled to watch the uplifting of the huge monolith the raising took place. When half way up there was a sudden stoppage, but a sailor from San Remo shouted, "Water the ropes." Fontana wisely took the hint, and in the end success awaited him. Ever since that time San Remo has been privileged to supply the palms for the procession at S. Peter's on Palm Sunday. What a magnificent surprise awaits the visitor as he comes from narrow and dark streets and finds himself suddenly in this glorious piazza, with its fountains by Carlo Maderno copiously splashing water, and the lovely colonnade of Bernini (1667) stretching its arms round the scene as if to embrace those who come to worship at the shrine of Peter.

Multitudes of steps bring us to the basilica itself, and the sensation on entering through one of the great bronze doors is simply that of bewilderment. Here you are in the largest church in the world, and as you gaze upwards you have a feeling that you yourself and the rest of the human race are dwarfed into absolute insignificance. After being sufficiently humiliated the visitor crawls up to that great canopied altar under the dome, and he learns that the canopy itself is nearly 100 feet high; while the dome above it, resting upon four enormous pillars, 78 yards in circumference, soars up to heaven, with its four colossal statues of S. Longinus, S. Helena, S. Veronica, and S. Andrew.

S. Peter's is the creation of some of the greatest artists who have appeared on the stage of human life—Michael Angelo and Raffaello, and in a lesser degree Bramante and Giacomo della Porta, employed by Sixtus V. to complete Michael Angelo's dome. In praising S. Peter's the great basilica which preceded it should not be forgotten. Creighton says, "No Bishop was ever so untrue as was Julius II. to his duty as keeper of the fabric of his church. The church which he strove to raise never met with the reverence which had been paid to the venerable building which he overthrew." But, anyhow, Julius II. in 1506 began the present church from the designs of Bramante, and after the interruption of the work from various causes in the pontificates of Leo X. and Paul III., Michael Angelo was sent for by Julius III., and carried on the work till his death in 1563. Giacomo della Porta finished the dome, Carlo Maderno built the great *façade*, and the church was dedicated by Pope Urban VIII. in 1626.

We can only look closely at one feature of the interior, viz., the statue of S. Peter, of which Gregory II. is said to have written, "Christ is my witness, that when I enter the temple of the Prince of the Apostles, and contemplate his image, I am filled with such emotion that tears roll down my cheeks like the rain from heaven." Formerly it was supposed to be the Capitoline Jupiter transformed into an Apostle, but the best authorities consider that it belongs to a much later date than the apostle himself. The toe of the right foot is much worn by the devotions of the faithful.

A beautiful view of the dome of S. Peter's from the gardens of the Vatican shall be our signal for entering that marvellous palace.

At this corner of the colonnade we enter and mount the *Scala Regia*—a magnificent work of Bernini—having passed the Swiss Guard, whose picturesque costume was designed by Michael Angelo. After mounting many steps we arrive at an entrance to the Sistine Chapel built for Sixtus IV. in 1473. Amidst many improvements in Rome the Sistine Chapel was the chief glory of the Pope. He summoned to Rome such artists as Ghirlandajo, Botticelli, Luca Signorelli, Perugino, Pinturricchio, and many others, and employed them to decorate with frescoes the walls of his chapel.

The examination of these leads on the astonished beholder to the surpassing grandeur of the vaulting, which shows the most perfect work of Michael Angelo. The conception of the Almighty Creator in the various acts of His creation is so glorious, so unlike anything else, as to make the spectator sink into a reverie of wonder and amazement that such genius could have resided in a human being. This ceiling was uncovered in 1512, and immediately became the artistic wonder of the age. Of the "Last Judgment," by the same master, covering the wall over the altar, it is more difficult to speak. In its present condition it is blackened by age, and by the smoke of altar lights and incense, and it is somewhat unnatural to most people to praise its beauty. The figures, in every conceivable attitude, are (as some one has said) the creation of one who was above all else a sculptor. The conception and design are alike amazing, especially for an artist who has passed the prime of life; but yet he would be a bold man who would venture to criticise unfavourably this effort of genius, which took the master at least seven years to carry into effect.

The Vatican Palace is enormous, as we all know. It is believed to contain some 11,000 chambers of different sizes. The glories of it, besides those which have been mentioned, are the frescoes of Raffaele, the picture galleries, and the sculpture galleries, both of which contain the masterpieces of art. Here is just one picture of a room decorated in the Raffaele manner. This is the *Salone di Costantino*, decorated under Clement VII., a Medici Pope, in 1523. Raffaele had prepared the drawings for the frescoes, but they were executed after his death by pupils. On the wall to the left of the picture is the "Battle of the *Porte Molle*" and the "Defeat of *Maxentius*," executed by Giulio Romano. Julius II. chose this and three other rooms for his own use, and employed Raffaele to decorate them.

It would perhaps be worth while to see more of the work of Michael Angelo, and therefore I will place before you a picture of the monument of the Pope who discovered Michael Angelo and Raffaele, viz., Pope Julius II. The whole is unfinished, and Julius II. is buried in S. Peter's, but the figure of Moses is justly regarded as one of the noblest specimens of the sculptor's art. On either side are Rachel and Leah, also from the hand of Michael Angelo; above are other figures by inferior artists, and, worst of all, the figure of the Pope himself. As to the Moses, it represents as much the character of Pope Julius as that of the great law-giver himself: he looks as if he could rise up and dictate laws to the human race; the countenance is

full of vigour, though there is the overhanging brow, which indicates a certain melancholy cast of thought: it always seems ill-suited to its present position, if placed on some solitary detached spot it would command more attention and admiration. Then we have Michael Angelo's great buildings in the Campidoglio. The Palace of the Senators, originally built by Boniface IX. in 1339, was altered by Michael Angelo, who designed the other buildings of the Piazza—the Museo Capitolino, and the Palace of the Conservators. In the centre of the Piazza he wished to place the famous statue of Marcus Aurelius, which has only stood there since 1538, as the Canons of the Lateran were unwilling to part with a statue which was then supposed to represent their founder, Constantine. Now, however, it is the glory of the Piazza, and is unquestionably the most perfect ancient equestrian statue in existence. Matthew Arnold speaks of Marcus Aurelius as the most beautiful character in history, and refers to the words in the Emperor's own record of his life, when he says, "From my mother I learnt piety and beneficence, and abstinence not only from evil deeds but from evil thoughts: and further, simplicity, in my way of living, far removed from the habits of the rich. From my tutor I learnt (hear it, ye tutors of princes) endurance of labour, and to want little, and to work with my own hands, and not to meddle with other people's affairs, and not to be ready to listen to slander." As we recall this testimony, and look attentively at this wonderful statue, we really feel inclined to add our small meed of homage not only to the artist, whoever he was, but to the royal and august ruler of men, whose character he here delineated. Such was Michael Angelo's veneration for this statue that, having gazed fixedly at it for some time, he called upon the charger to *walk*.

That great builder, Sixtus V., planned this beautiful flight of steps from the Piazza di Spagna, leading to the Church of Trinità dei Monti, in front of which stands an obelisk which used to adorn the gardens of Sallust. This well-known locality used to be the resort of artists and artists' models, and is now made beautiful by the stalls of flowers ranged for sale round its lower steps: while the church received additional notoriety from the visit of Mendelssohn, who was so enraptured by the unseen choir of nuns and their singing that he composed some motets especially for them.

And now this address may perhaps be fitly brought to a close by a rapid exhibition on the screen of a few of the principal fountains of Rome. To my mind, there are few things which contribute more to the beauty of a great city than fountains. Their movement stirs the imagination, their colour varying so much in all the different lights of day and night, their suggestion of purity and cleanliness—all affect our minds, and raise them up from that gloom and heaviness which so often overtakes us.

Rome is *par excellence* the city of fountains. It maintains its reputation at the present day. Here is a fountain, beautiful in design, fed by the Acqua Marcia, coming from the Sabine mountains in an aqueduct 56 miles long, constructed originally in B.C. 146, restored in 1869.

Here is the more famous Trevi fountain, concerning which all writers on Rome have much to say. One especially, in speaking of

its design, declares that "some sculptor of Bernini's school has gone absolutely mad in marble." However that may be, the general effect is charming. The water gushes out from the mouths of tritons and sea monsters on all sides, while Neptune seems to be taking general oversight of their proceedings. The aqueduct which supplies the water is said to yield daily upwards of 13 million cubic feet of water.

I am conscious, in conclusion, of having repeated an oft-told tale before my audience, some of whom very likely know the Eternal City far better than myself. But, as the Romans say, if you have cast a coin into the Trevi fountain at your last visit, nothing will prevent you from returning again. As for me—coin or no coin—there is no city which I would more willingly visit over and over again than Rome, whose principal glories, or some of them, I have tried, very imperfectly, to make real to you to-night.

The publication of these Notes on Rome in the *Journal* of the Society makes it necessary for me to acknowledge my indebtedness to such books as Augustus Hare's "Walks in Rome" and Norwood Young's "Rome" in "Mediæval Towns." From these and other works on the subject my Notes for the Lecture were compiled.

NEW BOOK.

"GEOGRAPHICAL GLEANINGS." Part I., on Some Methods of Teaching Geography. Part II., on the Preparation and Teaching of the Subject. By the Rev. Frank R. Burrows, M.A. London: Geo. Philip and Son Ltd. 1906. Price, 1s. 6d. net.

THIS is a delightful book to read, and is an earnest plea for a more intelligent and a more enlightened method of teaching geography.

The book abounds in valuable suggestions and helpful advice for those interested in the advance of geographical knowledge, and most teachers of the subject could read the book with interest and profit.

If the suggestions and methods so ably put forward in this little book were followed by teachers, a great step would be made towards breaking down the old methods of teaching geography, and at the same time a truer conception of the educational value of the subject would be formed.

The careful perusal of the book cannot fail to impress one with a desire for greater intelligence amongst teachers and pupils, and also for a more rational method of teaching the subject.

H. C. M.

NEW MAP.

COMPARATIVE SERIES OF LARGE SCHOOLROOM MAPS. ASIA: 80 inches by 67 inches; scale, 1/6,000,000. London: George Philip and Son Ltd. 1905. Price, 18s.

THIS wall map of Asia is a great advance on many at present in use. The physical features and political boundaries stand out very prominently, and are clear and well defined. The map does not contain a list of useless names, while those used are printed in clear, bold type. Altogether the map is a desirable one, and worthy of a good position on the wall of any school.

H. C. M.

OROGRAPHY AND HISTORY.

By E. W. DANN, B.A., F.R.G.S.

[Addressed to the Society in the Geographical Hall, on Tuesday, April 3rd, 1906, at 7-30 p.m.]

HISTORICAL Geography is one phase of the great study of man in his terrestrial environment, and of the many phases it is assuredly the most scientific. If properly treated, it has a very large philosophic element, and should appeal far more than it does to the student of either Geography or History. Perhaps this is the last aspect of Geography remaining to be seriously taken up by some specialist of conspicuous ability, and given to the world in logical sequence of cause and effect. The old Geography, it has been well said, attempted, somewhat ineffectually, to answer the question, *Where?* The new asks, *Why there?* Similarly, Historical Geography has till now hardly occupied itself with more than asking the positions of places which have loomed large on the horizon of past events; and it has found them, with infinite trouble, scattered over a variety of maps, politically coloured and with freakish attempts at hill-shading, and marked either very obscurely (with the familiar crossed swords or not, as the case may warrant), or in strict accordance with their population. Some dim awakening seems to have come, and lately we have seen a historical atlas containing maps coloured according to the height of the land, but giving no sort of clue to their meaning in history. In short, they illustrate the orography and leave out the history—a very strange proceeding.

One aspect of Historical Geography has been pretty thoroughly thrashed out, viz., the extent of various States at various times, but there is little or nothing that is more than mere memory work in all this. It is no very great encouragement for the student of European History, who has been straitly charged to pay special attention to the geographical aspect of it all, to be asked in his examination to draw a map of the Hapsburg Dominions in 1740, or of the States of Greece in 400 B.C.

Our purpose here is not to claim the initiation of some portentous new phase of learning, but by collating fragments from many works to show to what an extent land structure has affected, or is likely to affect, history, in certain cases, and thereby to stimulate interest in what is undoubtedly a most fascinating study. Orography means the study of heights of land; in the present instance we shall deal, not only with the presence of high land, but also with the absence, in influencing, if not deciding, the course of the progress of the nations.

This treatment naturally falls into two divisions, the general and the particular. At times, as we shall see, they are inseparable, but on the whole our subject may be said to illustrate, on the one hand, the characteristics of peoples as determined by their geographical environ-

ment, and on the other the inter-relation of cause and effect in the movements of peoples, their migrations and wars. In short, we are to discuss the statics and the dynamics of history.

Let us first clear our ground. Historical development depends upon far more than Orography. It is easy to illustrate this. *Ceteris paribus*, one may naturally expect low land, especially at the mouth of some navigable stream, to be the place of entry into a country for hostile peoples. We remember how in our own country the Thames Estuary, the Wash, the Humber, and Southampton Water gave entry to Saxon and Dane; how the Dublin lowland made the heart of Ireland easy of access to Strongbow, to Essex, to Cromwell; how Lisbon gave a base to the English in their struggle against Napoleon's marshals, how the Guadalquivir gave the Moors an entry into Spain, and how the possession of the St. Lawrence gave us Canada. This rule does not always hold good. The Amazon, vast flood that it is, with an enormous basin stretching for 2,000 miles back to the Andes before it even reaches an elevation of 600 feet, is no easy highway into South America, although the height map would tell us that it is. The Niger mouth never led explorers in the direction of Timbuktu; a physical map cannot show its ill-defined delta, a maze of mangrove swamp. Hudson's Bay is not the classic waterway into Canada. Nicolairosk and the Amur do not give the readiest access to Manchuria. There may be forests in the way, or swamps, or ice-floes, and Orography does not reveal these. Latitude, or a question of vis-à-vis, or harbour facilities, all play their part. But even here the predominant factor is land structure. It is true, too, that man himself often transcends difficulties which might have been thought insuperable. Think of Hannibal's marvellous attack upon Rome. Unable, as Napoleon was unable in our case, to reckon upon a safe passage to Italy by sea, he crosses the Rhone, traverses the Alps with a surviving force of 20,000 foot and 6,000 horse; after a few days he chastises the hostile barbarians, takes from them their city of Turin, and then faces the power of Rome, with its army of 170,000 men.

Though man may conquer mountains, and though comparatively level ground often conquers man, nevertheless the general principle holds good, that the flattest and most easily accessible ground is the natural highway for man's activities. This, it may be said, is a truism, but its adequate illustration is no easy matter. Historical knowledge is necessarily confined, not in regional compartments, but in chronological. Some time ago a plea was made for "systematic" Geography—the World divided into natural regions, based upon structural divisions, temperature belts, climate, vegetation, and density of population. There are also historical regions. We will not labour here to show how some parts of the World have no history—such as the tundras and ice-caps of the polar regions, where even the poor persecuted mammoth could lay down his weary bones in peace—how some breathe history from every stone, how some are lands occupied, without serious molestation, by colonists, and how some, like India, have been the battle ground of nations. Much of this lies outside the scope of our subject.

It is well known that sea-faring people are generally enterprising and that mountain people love independence. Such is undoubtedly

the case. Athens of old created a maritime empire of a size that Sparta and Thebes could never rival. Holland, Portugal, and England, with their proportion of seaboard, were ahead of the rest of the World by an immeasurable lead in colonising enterprise. The Swiss, the Afghans, the Scotch, the Welsh, have all made history by their grand struggles for independence. This question of physical environment goes much farther than one would at first suppose. Take for an instance Albania. The Shar range permits no passage of loaded animals; the hills slope towards swampy ground or an inhospitable coast; and torrential streams flow, fed by a copious rainfall, in deep troughs through hills of very steep incline. The consequence is the separation of clan from clan, absence of common sentiment or authority, a glorification of fighting, a devolution of all hard work upon women, blood feuds, dislike of urban life, and all the evil passions bred by these habits of existence. These same people, if found in other parts of this region, in Constantinople or the Levant, become, in their changed conditions, comparatively harmless and even ornaments to society. Farther south, in a flatter country, the dreaded Ghegs give place to the more amenable Tosklis, flocks and herds are kept, there is no blood feud, strangers are admitted, some attention is paid to the soil, and the use of weapons is no longer the be-all and end-all of existence. Mr. Hogarth says, "Facilities for navigation, the mountainous and beautiful nature of the land, and the keen bracing air of the most part of it, have been the chief formative influences in Greek life in all ages. The highlanders' restless individualism, intense local feeling, love of independence and imaginative habit, modified and softened by the civilising influence of the element which chiefly draws men together, assimilates and makes them know, and borrow from, the world about them—these are at the root of Greek character, and the result has been sharpened and refined by the singular fortune of climate. The essential influences are the same now as they have always been, and they produce the same general order of intelligence, of greater or less energy; but the channels into which that intelligence is directed have always depended on other influences, not physical, and mostly acting from without."

Indeed, in small areas we can see wider differences in people who have always lived on the land. Most Englishmen can see a difference between what is euphemistically termed the "sturdy independence" of the inhabitants of bleak Pennine lands, and the less extreme habits of those who dwell in the Thames Valley or the eastern counties. And how the Athenian poured scorn and contempt upon the bucolic Theban, ὁ Βουκόλος, as he called him!

Professor George Adam Smith, in his magnificent *Historical Geography of the Holy Land*, taking his reader even farther than this in a chapter on the climate and fertility of the land, shows that the migration of Israel to Palestine affected them in two ways. "It meant an ascent in civilisation and a fall in religion." Living in the desert meant a nomadic life. They were a series of loosely-connected pastoral clans, but became a united people, with a definite territory, and its culture as a means of life. The settlement in Canaan raised the standard of living. The creed of the desert nomad is simple and austere. His hard life makes him dependent on powers which are

higher than his own. But translate him to Syria, the land of lavish gifts, where "the freedom of nature excites, and seems to sanction, the passions of the human body, where food is rich and men drink wine." Imagine the contrast between the scorching and monotonous aridity of Arabia and the sudden paradises which Syria presents. No wonder that Israel fell into polytheism. "In every favoured spot of the land their predecessors had felt a Ba'al, a Lord or Possessor, to whom the place was Be'ulah, subject or married, and to these innumerable Ba'alim they turned aside."

How appropriately, too, was the greatest of the southern continents styled Darkest Africa. This vast land was for century after century a closed book to the civilised world. To men of ordinary resource and ordinary courage it was impenetrable. Low, harbourless shores, with the narrowest of coastal plains, a huge tableland behind with next to no navigable rivers to lead the stranger into the country—what wonder is it that it needed a succession of heroes, such as the World began to see only after the nineteenth century had well begun, to make it possible for European nations to enter Africa, and to strive, in one way or another, to put an end to the dark and dismal habits of some of the most ignorant and degraded savages the World knows?

Afghanistan is a very fine instance of the effect of environment upon human beings. It is a little unfortunate that the accounts we have of the Afghans are nearly all from the pens of writers of our own nation, and are therefore under the suspicion of partiality. The Afghans, like other nations with whom we have come into collision, are vituperated rather than criticised. In 1840 we, for political reasons, interfered in that country in no very creditable way and with disastrous results. In 1848 the Afghans helped the Sikhs against us, we had trouble with them in the Persian affair of 1855, and in 1878, in order to outbid Russia, we sent a "mission" of a thousand men, "too many for peace, too few for war," to demand the reception at Kabul of a British Embassy. In pursuit of this questionable object, and of the equally questionable plan of establishing British representatives and an intelligence department in Afghanistan, a war was forced upon the Amir. This also produced disaster, relieved by brilliant exploits it is true, and the country was once more evacuated. Hence the Afghans are known to Englishmen as "stubborn, brave, and so treacherous that the word gains an intensive meaning when applied to them. Towards strangers they are either servile or hectoring, the probable result in personal financial profit being the sole rule of conduct." They are, in point of fact, a typical mountain people shut in by physical obstacles from all the beneficent influences of civilisation, fierce and clannish and a terror to their enemies. What tribes in India have given us the most trouble? The hill tribes. This is, of course, largely due to the fact that we have had to fight them in their difficult mountain regions; but their resoluteness and tenacity have proved as great a stumbling block as their country, and that resoluteness and that tenacity are the product of their environment. Clive's task at Plassey, against great odds, was a trifle compared with Gough's at Chillianwallah, where there was no very great disparity of numbers. Similarly, the Romans had a far tougher task with the inhabitants of northern Scotland than they had with the Britons of Kent or East Anglia. Indeed, they never

subdued the Piets and Scots. How superlatively difficult was our task in the Zulu War of 1877; and how disastrous was the experience of the Italians on the Abyssinian border a few years ago!

It is perfectly true that Orography alone does not make the difference between servility and love of liberty. The inhabitants of the American colonies lost to us by Burgoyne's defeat at Saratoga and Lord Cornwallis' surrender at Yorktown did not owe their independent spirit to the structure of their country, but to their British descent; and the Dervishes of the Sudan have been actuated, not by a climate that breathes freedom, but by the omnipotent power of a magnificently fanatical religion. Nevertheless, the general principle holds good, and the denizens of a land of ozone and mountains are always superior in spirit to those of a country of malaria and plain. This spirit has made history, a history of progress, a history of independence.

So far, then, we have seen the effect of Orography upon general character. Even more important has it been upon events. The migrations of peoples and the campaigns of generals have always been, and always will be, circumscribed by the configuration of the land. So it is that we find, over and over again, similar events taking place, at widely different periods, in the same localities. A few examples only will have to suffice. They could be multiplied indefinitely.

The migrations of peoples constitute the simplest study of this kind. At one time nomadic Asia swarmed into Europe: in the eighteenth century colonising Europe began to overflow into Asia. We choose two instances of the former, on account of their simplicity and the instinctiveness of the warring tribes. First in order we take the rise of Islam. The cradle of Mohammedanism was Arabia. Impelled by the warlike spirit of their great leader, the Turkish peoples went forth from this centre, conquering and to conquer. Syria was annexed in 634, Persia was ruined by the Arabs at Cadesia two years later. Jerusalem fell in 637, and Egypt was conquered in 640. Eastwards the victors spread into India. We will follow them westwards. In 697 the Saracens stormed Carthage. Four years later the Arabs took Sardinia, and they were constantly successful in Asia Minor and Spain. Gaul, however, began to feel the weight of invasion, and Burgundy was ravaged in 725. Poitiers saw an Arab defeat in 732. This battle is generally known to fame as the battle of Tours, and was the turning-point in the history of the Moorish invasions, one of the great battles of the World's history. Many hard blows had, however, still to be struck. Charles defeated them again, and in Spain Alfonso, king of the Asturias, began a series of successful forays against the common enemy. Pepin took Narbonne in 759, a most vitally important fortress in all times, and freed the north side of the Pyrenees. In 778 took place the celebrated Roland incident at Roncesvaux, when Charlemagne's rearguard was cut off, and here we will leave this particular illustration. The Arab migrations, then, as far as we have followed them, had their course along the low coast of Syria, Sinai, Egypt, and Northern Africa to the Atlas. From here the Arabs crossed to Spain, and Andalusia was their first stronghold. The orographical map shows why. Northwards they travelled as far as the Loire, but that was their high-water mark. The gate of Carcassonne, which one can now no longer, alas! hear magnificently

described by Mr. Mackinder at Oxford, saw the last of the Moors in France. The only other accessible part of the Pyrenees saw the defeat of Charlemagne's rearguard.

Orography, too, determined the course of the Vandals. Springing originally from the land between the Oder and the Vistula, they appear to have crossed the Rhine near Mainz, to have passed by way of Reims and Orleans, to have passed the eastern end of the Pyrenees, crossed Spain, traversed Northern Africa, and to have spent their force upon Sardinia and Sicily. Here we have the same story in reverse order, and the movements of man taking a precisely similar series of tendencies. We cannot leave mention of Spain without touching briefly upon the Peninsular War. A finer illustration of our subject hardly exists. The French enter Spain by the eastern gate (they leave it by the western). Our base is Lisbon. In 1808 Wellesley wins the battle of Vimiera, just north of Lisbon, and frees Portugal of the French. In 1809 Moore executes his clever, but none too successful, move to save Madrid, and dies at Corunna. In 1809 a successful engagement at Talavera threatens Badajoz, in 1810 occur the affairs of Busaco and Torres Vedras, the French failure to drive us out of Portugal. The campaign of 1811 prevents the relief of Badajoz. In 1812 we are able to take the offensive. Badajoz gives us the line of the Guadiana and Ciudad Rodrigo makes it possible to threaten Madrid from the North. Salamanca gives us temporary possession of Madrid. In 1813 the task of driving out the French begins to move more rapidly, and the battle of Vittoria gives us the opportunity of seizing San Sebastian and Pampluna. The battles in the western passes of the Pyrenees lead to the invasion of France, and Orthez and Toulouse put an end to this phase of the war. Once more have we seen similar events taking place in the same localities. The surface features of the ground have again directed the efforts of man into the same channels as of yore. Other instances could be cited, such as, for example, the Black Prince's misguided expedition from Bordeaux into Navarre on behalf of Pedro the Cruel; but these will suffice.

Our last illustration to be taken in anything like detail will be the colossal struggles between France and its foes in Europe. The land features which have decided, in all cases, the lines of action are the Belgian border, with the streams, the Sambre and Meuse, leading thereto; the Gate of Metz, or the line of the Mosel, and the Burgundy Gate. The Sambre and Meuse tell us of Navarre and William III., of Ramillies and Marlborough, of Waterloo, of disastrous Sedan. The Moselle reminds us of the fall of Metz. The Burgundy Gate recalls memories of Belfort and Strassburg. But these routes have been used over and over again, in both directions. The great combined invasion of France in 1813-1814 illustrates this if we compare it with the invasion in the opposite direction in 1870. In 1813 Blücher, with the main Prussian army, known as the army of Silesia, crossed the Rhine in three columns at Koblenz, Mannheim, and Mainz. These were to strike along the Mosel. Schwartzenberg turned the mountains of the Jura by marching through Switzerland and coming northwards to meet Blücher, leaving the Rhine fortresses behind him. Farther north Antwerp, still faithful to Napoleon, was besieged, at Lyon Augereau failed to do anything to stop the Austrians, though he might have seriously hindered them

as they emerged from the Jura, and Soult had his hands very full with Wellington in the south. The campaign therefore resolved itself into a series of hammer-like blows by Napoleon in Champagne upon the scattered forces of the allies. Blücher was between the Marne and the Aube, with Paris as his objective, and a series of engagements took place in which Napoleon, screening his movements behind the Seine, cut up division after division of Blücher's army at Brienne, Champaubert, Montmirail and Vauchamps, and of Schwartzberg's at Nangis and Montereau. After a pause Napoleon failed to win the battles of Crâonne and Laon, to the west of Reims. Eleven days later he struck, in vain, against the southern force at Arcis-sur-Aube. With marvellous tenacity the Emperor marched on the invader's line of communications towards the Vosges, but the allies did not heed him, and Paris fell.

Compare this with the Franco-Prussian War. The French position at the start was as follows: From Strassburg to Metz two lines of fortresses, one north-westwards, *via* Bitsch, the other westwards, *via* Nancy. Strassburg and Nancy were in their turn connected in rear with Belfort, the entrance to the Burgundy Gate and with Lyon, while Nancy and Thionville communicated with Paris by two railroads, one passing through Châlons and Eprenay, and the other by Mézières and Reims. The German main attack was delivered on Metz and Strassburg. The defeats at Saarbrück, Weissenburg, and Wörth isolated Strassburg and endangered Metz. That fortress was soon invested, and the Prussians advanced on the Marne. Marshal McMahon retired to Nancy and Châlons-sur-Marne, and from there made a detour *via* Reims and Rethel in order to relieve Bazaine. The battle of Beaumont shut him up in Sedan, and all the world knows the rest. The German advance on Paris was in two divisions: the 3rd Army Corps made, by way of Rethel, Reims, and Eprenay to the Marne, Montmirail, and Colomniers, investing the south of Paris. The 4th Army Corps passed by way of Vouziers and Reims to the Marne at Claye, and took up its position on the north of the city. Strassburg fell meanwhile, the Loire army was beaten at Orléans, St. Quentin was taken, Metz capitulated far in the rear, and Paris was forced to admit the victorious Prussians. The two great sets of operations in 1814 and 1870-1 are, in point of fact, strikingly alike, and necessarily so from the formation of the country.

The most striking instance, however, of the almost infallible way in which physical conditions have over and over again caused human activities to move in the same channels is that of the Danube. Space does not permit of detailed notice of the numerous incursions along the line of this vast stream: but one may in a general way point out how events have recurred at the same points. The Upper Danube being one highway to Vienna, we note that Marlborough's march in 1704 to relieve Austria from destruction was directed from Belgrum, by way of Coblentz and the Rhine to Donauwörth, where the British General crossed the Danube. The result was the great battle of Blenheim and the salvation of Europe. Moreau, too, in 1800 had his headquarters at Augsburg and his advanced guard at Munich. At Hohenlinden, in December, he won his great victory and then pushed on along the Inn, the Salzach, and Traun, and the Ens. Macdonald

crossed the Splügen and penetrated Tirol, and with two armies threatening him the Emperor Francis sued for peace, which was concluded at Lunéville. In 1805 General Mack established himself at Ulm, fancying that Napoleon would advance, like Moreau, through the Black Forest; but the Grand Army came through Würtemberg and Franconia, violating the Prussian neutrality by passing through Anspach, and cornered Mack and 33,000 men. Next, Napoleon marched past a combined Russian and Austrian force in Moravia, occupied Vienna, crossed the Danube, and subsequently faced the two emperors at Austerlitz. In 1809 the Archduke Charles advanced into Bavaria, and once more Napoleon won battles at Abensberg, Eckmühl, Essling, and Wagram. It is the same story over again. The Moravian Gate, along the line of the march, together with the line of the Oder, is strewn with the battlefields of the past. Olmütz, Glatz, Neisse, Küstrin, Künersdorf, Zorndorf, tell us of Frederick the Great and his wars, and the line of the Elbe is inseparably connected with the campaign of Lützen, Bautzen, Dresden, and of Leipsic, where Napoleon was overwhelmed in 1814. The Iron Gates of the Danube bristle with places of importance in the wars between Hungary and the Turks, and the lower Danube, bordering the plain of Roumania and looking towards the gap between the Black Sea and the Karpathians, reminds us of past activities when we see such names as Ruschuk, Silistria, or Plevna.

In our own country the east coast lowland, the Cheshire Gap, the Severn border, the Weald of Kent, have all played their part. But we must reluctantly pass them by. It would have been useful, too, to trace out the history of Asia Minor, Arabia, Syria, and Iran in the light of their structure, or to consider the events that have been moulded by the formation of the New England coast. But enough has, we hope, been said to emphasise the enormous importance of a scientific study of the interaction of land forms and events.

Such, then, are a few instances of the vital effect Orography has had upon History. Only a few such have been possible in the small space at our disposal. They could be multiplied indefinitely. It is possible, no doubt, to exaggerate the effect of land structure upon historical development; but the danger is not great as yet. This short study is intended to serve as a plea for a more scientific, even a more common-sense study of History. To illustrate events by maps of fourth-rate workmanship, with all idea of Orography utterly absent, is no attempt at Historical Geography, properly so called. The real thing should be, not a series of brilliant essays with an occasional sketch map thrown in to tell one where such and such an event took place, but a succession of finely-executed contoured maps of regions where man's activities have been pronounced and repeated. It is a Historical Geography on a regional basis that we need, and not a course of mere "crum" work, in which the memory alone is brought into play to docket and pigeon-hole the innumerable changes of frontier which successions of wars and dynasties have made and obliterated. What part have the Margraviate of Baden, or the Principality of Hohenlohe, or the Republic of Andorra, carefully delineated as they are in many "Historical Atlases," played in comparison with the Moravian Gate, or the Strait of Dover, or the Bosphorus, or the Moselle? We must

study man in his terrestrial environment if we are to understand him aright, and we shall miss the greater part of our interest in his doings in the past, or in speculations as to the future, if we forget the constant and inevitable interdependence of Orography and History.

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NEW BOOK.

"LIPPINCOTT'S NEW GAZETTEER." A Complete Pronouncing Gazetteer or Geographical Dictionary of the World. Edited by Angelo Heilprin and Louis Heilprin. Philadelphia and London: J. B. Lippincott Company. 1906. Price. £2 2s. net.

THIS is a handsome volume of well over 2,000 pages, containing some 100,000 notices of countries, cities, towns, villages, and hamlets, of mountain ranges, rivers, lakes, and oceans; with historical summaries of the nations and condensed statistics of population and production. It will need the lapse of considerable time and the practical employment of the Gazetteer as a book of reference, with not unfrequent comparison of official returns and documents, to justify anyone in expressing an opinion as to the full merits of this book, which claims to be not a new edition of Messrs. Lippincott's old Gazetteer, but "an entirely new book from cover to cover." We can only give the impression made upon the perusal of the notices given of some well-known countries in Europe, Africa, America, and Australia. The space which can be given to the description even of the most important is, of course, very limited, but in the instances we have consulted we are impressed with the ability with which the Editors have condensed a large amount of useful information, and have brought their statistics, their history, and their scientific investigation up to the most modern date, and seem to have consulted the most trustworthy sources of knowledge. The writer of this notice has been greatly impressed by the literary skill which has produced historical summaries in which so clear an outline has been given of the main facts of the nations' stories which he has examined. In the United States of America and in the Dominion of Canada the names of hamlets and villages with only a few houses and a few scores of inhabitants are given. As the work is published in the United States it is not surprising that the same detailed information is not given with regard to the rest of the world, and that we have not found the names of some small places with which we happen to be familiar in Australia and in Europe mentioned. To have adopted the same plan in dealing with all other countries as with the United States and Canada would have made the Gazetteer an unwieldy volume. Even as it is, its size prevents the volume opening flat, and makes it not quite easy to read in places. The type is clear and distinct, and the volume is handsome in appearance. No one can fail to find in this work a useful addition to his library, and every one who wishes to keep abreast with the events recorded every day in the newspapers, whether political, commercial, or scientific in the broadest character, will find it a valuable source of information.

S. A. S.

A CHAPTER IN THE HISTORY OF THE EXPLORATION OF
THE CANADIAN ROCKY MOUNTAINS.

BY HERMANN WOOLLEY, F.R.G.S.

[Addressed to the Society, in the Coal Exchange, on Tuesday, March 21st,
1905.]

OF the thousands of persons who travel yearly between Vancouver and Montreal by the Canadian Pacific Railway probably few realise that before the line was made, twenty years ago, British Columbia was completely cut off from Eastern Canada by natural obstacles, that the journey from Montreal to Vancouver could be made only by a long circuitous route through the United States, and that a Montreal man could visit London far more easily than any part of British Columbia.

The most formidable of the obstacles over which the Canadian Pacific Railway had to be carried are the Rocky Mountains and the Selkirk Range, while farther westward are the Cascade and Coast Ranges; and the country is so difficult and the distances are so great that the preliminary work of exploration and survey alone is said to have cost about £700,000.

When the route to be taken by the new railway had been decided there was no urgent need for further exploration, and, although the line was completed in 1886, it was not till 1893 that Professor Coleman, of Toronto, and Mr. Wilcox, of Boston, with other members of the Boston Appalachian Club, began to make expeditions into the Rocky Mountains both north and south of the railway.

In 1897 Professors Norman Collie and Harold B. Dixon joined a party of American friends in a climbing expedition near Laggan, a station on the eastern side of the Rockies, and in the course of this expedition Professor Collie saw several lofty peaks, apparently sixty or seventy miles away to the north-west. Now, in 1827 a botanist named Douglas stated that he had discovered two high mountains, respectively 16,000 and 15,700 feet high, close to the Athabasca Pass, about eighty miles north-west of the nearest point now touched by the railway, and to these peaks he gave the names of Mount Brown and Mount Hooker. When Professor Coleman visited the Athabasca Pass in 1893 he failed to find in the neighbourhood any mountains of greater altitude than about 9,000 feet; nevertheless, Mounts Brown and Hooker continued to retain their places and heights in all the maps of Western Canada likely to be consulted by the general public. It occurred, therefore, to Professor Collie that perhaps the summits he saw to the north-west might, after all, prove to be Douglas's great peaks, and so it came about that the following year he invited Mr. H. E. M. Stutfield and myself to join him in a journey to the sources

of the Athabasca River, in order to visit the mountains he had seen and ascertain whether they attained the heights attributed in the atlases to Mount Brown and Mount Hooker.

We left Liverpool for Montreal in July, 1898, our steamer taking the northern course through the Straits of Belleisle, and as the summer was not far advanced we passed a number of very beautiful icebergs before nearing the coast of Newfoundland.

From Montreal to Banff—our first stopping-place in the Rocky Mountains—the distance is 2,346 miles, and the journey by the Canadian Pacific Railway occupied three days and a half.

After leaving Ottawa the country traversed consists largely of a wilderness of fir-wood, ice-worn rocks, lakes and streams; then for about two hundred miles the line runs through fine scenery on the north shore of Lake Superior. Later follows more broken country, till about 1,350 miles from Montreal the rocks sink below the soil and we enter the flat fertile plain of Manitoba; finally comes the prairie plateau extending up to the Rocky Mountains.

Hour after hour the train passes through this vast expanse of prairie; there is little to attract attention save the innumerable old buffalo tracks and mud-wallows, and the only sign of man's activity is the lonely railway track, bordered by a straggling line of empty tins and bottles thrown from the cars during the last twenty years by immigrants and others.

After spending a day or two at Banff, which by reason of its picturesque situation and bracing air has become an important tourist resort, we took the train thirty-five miles farther westward to Laggan, the starting point for our journey into the mountains. At Laggan (4,930 feet) the railway, after ascending the Bow Valley for nearly two hundred miles, turns away westward towards the Kicking Horse Pass on the continental divide, while the course of the Bow River retains its former direction—*i.e.*, from N.N.-W. to S.S.-E.

Our party now consisted of Professor Collie, Mr. Stutfield, and myself, with four men, twelve horses, and three dogs. As it was necessary to take with us sufficient food to last six weeks, nearly all the horses were laden; but we also took saddles, in order that we might ride as the loads became reduced. The dogs were worse than useless, as they made away with much food which we could ill spare towards the end of the journey.

Our intention was to travel northward on the eastern side of the main chain by the valley of the North Saskatchewan. The most direct route from Laggan is along the Upper Bow River; but hearing that there was a very bad trail in the Bow Valley, we decided to take the longer route up the Pipestone Valley, the next parallel valley to the east of the Upper Bow Valley; consequently, on July 31st we left Laggan and started northward up the Pipestone.

Our difficulties began immediately. When the railway was constructed it frequently happened that the woods in the neighbourhood took fire, so that wherever the line passes through thick forest it is often bordered on both sides by a dismal belt of burnt timber.

About ten years after a fire the roots decay and the burnt trunks fall, forming a chaos of blackened logs, crossing each other in all

directions, through which it is often quite impossible to pass with horses and sometimes very difficult to penetrate on foot.

In 1898 the burnt timber to the north of Laggan Station was exceedingly bad, and within an hour after starting we lost one of our horses, which broke a leg in trying to jump a log and had to be shot.

After an hour or two we passed out of the burnt wood, and then found a fairly good trail; but during the next two days the heat was very great, and the horses were so sorely tormented by mosquitoes and "bulldog" flies that after very short marches we had to halt and to make "smudges" for them.

A smudge is made by lighting a fire and covering it with turf; this produces dense clouds of smoke, in the midst of which the horses stand, and so protect themselves against the maddening attacks of the flies.

Our sleeping tent was a teepee—*i.e.*, the old Indian form of tent, canvas being used in place of skins. On reaching a camping ground about twenty young spruce trees are cut down to make poles, which are arranged to form a hollow cone, and over them the teepee canvas is stretched, an opening being left at the top for ventilation, or to serve as a chimney when a fire is made inside. When mosquitoes were very troublesome we generally smoked them out of the teepee before turning into our sleeping-bags.

On the third day after starting we passed the tree limit and crossed the Pipestone Pass, which was estimated to be about 8,200 feet above sea level; we had, therefore, risen more than 3,000 feet since leaving Laggan. The weather was now unsettled and cloudy; but we were able to see, amongst the numerous summits of the north-west, one fine mountain, which was identified as Mount Murchison, erroneously credited in the maps with a height of 15,781 feet.

We now descended on the north side of the pass to the head of the Siffleur (Marmot) Valley, and were soon travelling again through forests of spruce—the prevailing tree in the Canadian Rockies—on a fairly good trail, which we followed for two and a half days down the Siffleur River towards the North Saskatchewan.

Up to this time the air had been clear, but in descending the valley we noticed an increasing haziness, which our men told us was caused by a forest fire somewhere to the north-east.

On reaching the Saskatchewan Valley we found the river in high flood, owing to the great heat melting the snow on the mountains; and the channel, which is several hundred yards wide, was filled from bank to bank with a swirling torrent of muddy water rolling eastward on its way to Lake Winnipeg.

We now travelled westward up the valley, whose flat floor is enclosed on both sides by bold limestone hills. The haze increased with every hour, till at last the atmosphere became so thick that the mountains on the north side of the river were almost hidden, and although the fire was probably a hundred miles distant there was a distinct smell of smoke and burning wood.

We heard afterwards that during that particular summer (1898) a number of "outfits"—*i.e.*, expeditions—had left Edmonton, which lay to the east, on the overland journey to Klondyke, and through inexpe-

rience or carelessness the woods had been set on fire at various points to the north and north-east of the Saskatchewan River.

In consequence of this smoky atmosphere it was quite impossible to obtain good photographs of distant views during the following three weeks.

There is an old Indian trail on the right bank of the Saskatchewan, but in many places this was now submerged, so that our progress was very slow. On one occasion three of our horses jumped into the river and swam off to an island, and when they had been induced to return we were obliged to halt for the rest of the day in order to dry our stores. At last we left the river, and, striking inland through the woods, found a good trail, and on the ninth day after leaving Laggan arrived at Bear Creek Mouth, a well-known camping ground, at the point where a rapid torrent called Little Fork or Bear Creek flows into the main river.

It is at and near this point that three rivers unite to form the North Saskatchewan; the three tributaries being the Little Fork from the south, the Middle Fork from the west, and the North Fork from the north.

Bear Creek Mouth is not improbably destined to become a favourite tourist centre in the future. The confluence of the three rivers occurs in a valley about a mile wide; fine limestone bluffs and peaks are picturesquely grouped on all sides, some of the mountains rising to between 10,000 and 11,000 feet above sea level, and still higher snowy peaks are seen in several directions.

Mount Murchison towers immediately above the camping ground to the south-east, and a few miles up Bear Creek is a very interesting canyon which the impetuous torrent has cut deep down into the limestone rock. There are several fine lakes in Little Fork Valley, and about ten miles up the Middle Fork is a very beautiful lake, called Glacier Lake, which is fed by one of the glacier torrents from the great Lyell Ice-field situated on the continental divide or watershed.

Our route now lay up the North Fork, and after camping for a day at Bear Creek to rest the horses, and after leaving a depôt of provisions for the return, we started on the second stage of our journey. In order to reach North Fork Valley it was necessary to cross first the Little Fork and then the Middle Fork.

At its mouth Little Fork, or, as it is usually called, Bear Creek, is a torrent about fifty yards wide, running like a mill-race over a bed of great boulders, so that the passage is always attended with some risk when the river is in flood; but, fortunately, we crossed it without accident, and then rode westward up the south bank of Middle Fork for about a mile and a half.

At this point the river is about half a mile wide, its bed consisting of a number of shingle and sand banks, separated by not very deep channels, and these were forded without great difficulty. We were now on the western bank of the North Fork, and after one or two attempts to force our way through the dense woods, were obliged to camp for a day while our head man, Peyto, and another of our men, Nigel, went on ahead with their axes to clear a trail for the horses.

We soon discovered that we were on the wrong side of the river ; but, owing to the great depth and volume of water, it was impossible to cross, and so for the next five days we continued to struggle up the western bank, leading our horses through the tangled woods, sometimes keeping to the margin of the brimful river, at other times forced up the densely-wooded hillsides by impassable swamps or " muskegs," as they are called in Canada. On one of these days we were able to advance seven or eight miles, on the others only three or four, and frequently the whole outfit was stopped for hours while the two axemen were cutting out a trail. During all this time the heat was great, and the mosquitoes were very troublesome, while the air was so thick with smoke that photography was out of the question, and little could be seen of the limestone mountains which rise thousands of feet above the valley.

On the fifth day after leaving Bear Creek we were camped on a low wooded point of land, to the north of which a great branch of the river, turbid with glacier mud, flowed in from the west. Although the only map at our disposal gave no indication of an important tributary at this point, it was obvious that this West Branch, as it is now called, brought down most of the water into the North Fork, and had its source in a considerable region of snow and glacier ; but Peyto and Nigel, who had been clearing a trail ahead, came back about noon with such an unfavourable report that we gave up all idea of trying to follow up this western stream.

Peyto reported that the woods on the south side of the West Branch were so dense that we should be able to advance only a mile or two a day, while the river banks were so beset with swamps that they were unsafe for horses ; in fact, it was necessary either to cross the main river or to turn back.

The North Fork Valley was, at this point, nearly a mile wide, and was occupied by numerous shingle flats and branches of the river. After some difficulty we succeeded in fording the deepest channel, and then were able to ride up the centre of the river bed, along banks of sand and shingle, and across comparatively shallow channels, having the main currents of the two rivers to our right and left. That night the camp was pitched in the angle formed by the junction of the two streams. Below us was the wide expanse of shingle flats, intersected by channels of muddy water ; to the south we could see some miles down the North Fork, with its dark woods growing down to the water's edge, while above the woods on both sides of the valley imposing mountains, with height and bulk exaggerated by the haze, loomed through the smoky atmosphere.

We could also trace the course of the West Branch for some miles towards the main watershed : it was an uninviting valley, occupied entirely by swamps, mud-banks, and numerous branches of the swift, swollen river.

Next morning we left our camp, and immediately began to make better progress up the continuation of the North Fork, now much reduced in volume. The valley became narrower, the river dwindled away to a mere torrent, and on the second day we left it, and had a long pleasant ride through hilly country, with views to the west of the snowy peaks and glaciers of the main chain.

Rising steadily almost to the tree limit, we crossed a grassy pass, about 7,000 feet above sea level, descended about a mile on the north side, and on the nineteenth day after leaving Laggan camped by a small stream, one of the sources of the eastern branch of the Athabasca River, whose waters, flowing through the Peace River, Great Slave Lake, and Mackenzie River, eventually reach the Arctic Ocean, after a course of some two thousand miles.

The first discovery we made on settling down in our new camp was that our bacon was nearly finished. Our food consisted practically of oatmeal, bacon, and bread—the cook baked bread every night—and in order to try to provide something to take the place of bacon, Mr. Stutfield, the sportsman of the party, decided to go forth next day with Peyto and Nigel on a hunting expedition. Hitherto we had seen nothing bigger than “fool-hen”—a species of tree grouse; but it was hoped that wild goat, or, better still, wild sheep (bighorn) might be found on the hills to the east of the camp.

Meanwhile Professor Collie and I arranged to start for the ascent of a fine snowy peak which rose on the south-west side of the valley behind an intervening ridge; we thought it might prove to be about 10,000 feet high, and might afford us a good view of the surrounding country. Owing to various delays it was nine o'clock next morning before we started. On scaling the crest of the intervening ridge we obtained a full view of our peak, and realised at once that our task was more formidable than had been anticipated. At our feet was a fine glacier, enclosed between the north-eastern and northern ridges of the mountain, and we ascended this glacier for some distance till it became very steep and much crevassed.

We then scaled the rocks of the north-eastern ridge; but this soon became a steep *arête* of hard ice, and it was necessary to cut steps in the ice for two hours before we gained the final rocks about two hundred feet below the top of the peak.

These rocks, as had been expected, were very steep; they were also exceedingly loose, and the greatest care was necessary in climbing them, but shortly before six o'clock in the evening we gained the narrow ridge of snow which formed the summit. Measured by the mercurial barometer the altitude was 11,900 feet above sea level, this being the highest point hitherto reached in the Canadian Rockies. As the mountain stands close to one of the principal sources of the Athabasca River, Mount Athabasca seemed an appropriate name for it.

The view which burst on us as we arrived on the summit was a great surprise. An immense, hitherto unheard-of ice-field extended for miles away to the south-west, west, and north-west, and round the margin of this expanse of snow and ice were numerous unknown peaks, two of which, lying to the west, immediately attracted our attention; we imagined their height to be fully 13,000 feet, and for a moment thought that we had found the real Mounts Brown and Hooker.

Professor Collie got out his plane table and filled in the positions of the various peaks, while I built a cairn on a rocky ledge on the south side of the top; then we packed up and hurried down—not the way by which we had ascended, but down the north ridge, which, although longer, was less steep than the other, and was moreover free from ice.

It was a race against time; but, by dint of glissading snow slopes, hurrying down the easy portions of the ridge, and using the rope at the steep drops, we just managed to cross the glacier before daylight faded, and then lit our lantern and found our way back to camp soon after 11 o'clock p.m.

Mr. Stutfield had arrived about an hour before us, and brought the welcome news that he had shot three wild sheep, so that we were now supplied with meat for some time to come.

Two days later our party of three set out for a further exploration of the newly-discovered ice-field, which it was decided to name the Columbia Ice-field. About three miles to the west of our camp was the end of a large glacier, which descends from the ice-field towards the north-east, and from which flows one of the chief sources of the Eastern Athabasca River. This ice-stream now bears the name Athabasca Glacier, and by it we decided to approach the ice-field.

Having slept in a sheltered place near the snout of the glacier, we started with a lantern about 1-30 a.m., and after five hours' work succeeded in gaining the upper névé. Crossing the ice-field nearly due west we advanced in the direction of the highest peak in sight (Mount Columbia), but after tramping through the soft snow for two hours, and gaining a height of 10,000 feet, it was obvious that the distance to be traversed was too great, and turning off to the north-east we ascended a dome-shaped snow mountain (11,650 feet), which afforded a comprehensive view in all directions.

From what was seen from this summit and from another more northern peak, ascended a few days later, it was evident that the ice-field extended across the continental watershed, and that none of the mountains around answered the description of either Mount Brown or Mount Hooker.

The interesting discovery was also made that the glacier-torrents which have their sources in the Columbia Ice-field drain into three different oceans—*i.e.*, those on east and south-east into the Saskatchewan and Hudson's Bay, those on the north and north-east into the Athabasca and the Arctic Ocean, and those on the west into the Columbia River and the Pacific.

A day or two later, taking with us three of the men and eight horses, with provisions for four or five days, we went northward down the East Athabasca (also called the Sun Wapta River), and ascended a peak of 11,500 feet near the northern boundary of the ice-field. We named this mountain Diadem, on account of the shape of its summit, and from it were able to see to the north and north-west a wild, unexplored region of rocky peaks and deeply-eroded valleys, without any very extensive snow-fields, and we also noticed that the highest mountains were those situated round the Columbia Ice-field. Professor Collie has determined the positions of and given names to all these peaks, the highest being Mount Bryce (ca. 12,000 feet) near the southern margin, Mount Columbia (ca. 12,500 feet) near the western margin, and Mount Alberta (ca. 12,500 feet) near the northern margin of the ice-field.

The long spell of hot weather now came to an end, and rain set in for several days, and as our food was nearly exhausted, we started on our return to Bear Creek: the rain seemed to have extinguished

the forest fires, and for the first time for more than three weeks we obtained perfectly clear distant views.

On our way down the North Fork we were able to follow the old Indian trail on the east side of the valley, and made such good progress that in one day a distance was covered which had occupied us for five days on the outward journey.

The weather was now much cooler, the rivers instead of being laden with glacier mud were almost clear, and had fallen so much that it was possible to cross the Saskatchewan below the influx of the North Fork at a point which had been unfordable a month earlier. After leaving Bear Creek Mouth we varied our return journey by ascending Bear Creek Valley to the Bow Pass. Frosty nights denoted the approach of winter, and during the ascent to the pass we were overtaken in a bad bit of burnt timber by a heavy snowstorm.

The following day the Bow Pass (6,800 feet) was crossed in such brilliant weather that we were able to identify several of the high mountains near the Columbia Ice-field more than forty miles away to the north-west. During the journey down the Upper Bow Valley our stock of food ran very short, and we were finally reduced to scanty rations of bread and tea, supplemented on the last night by a few trout caught in the Bow River; but on September 8th, after a desperate struggle with the formidable belt of burnt timber, we arrived at Laggan—having been absent forty days—and immediately celebrated our return by demolishing cold ribs of beef which we were fortunate enough to find at the railway station.

We had failed to re-establish the time-honoured but fabulous supremacy of Mounts Brown* and Hooker; but had been well repaid for our trouble by the discovery of the Columbia Ice-fields and of the high mountains which surround it.

Since 1898 the West Branch of the North Fork of the Saskatchewan has been explored by Mr. C. S. Thompson, of Dallas, Texas, in 1900, and by the Rev. Jas. Outram in 1902.

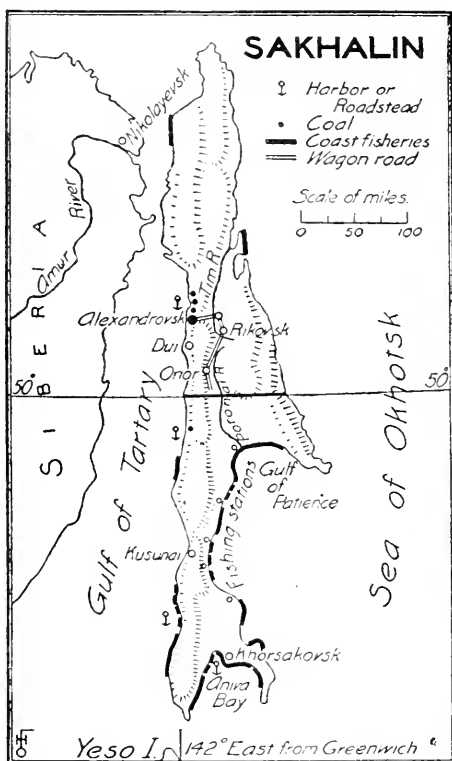
Professor Collie and Mr. Stutfield have also made two further journeys, visiting the Columbia Valley or western side of the watershed in 1900, and the head of the Middle Fork of the Saskatchewan in 1902, and Professor Collie has embodied the results of these explorations in the admirable map published in the "*Geographical Journal*," May, 1903.

In this map all the blanks have been filled up from the Siffleur Valley on the east to the Columbia River on the west, and the survey of the main chain has been carried to a point about 90 miles north-west of Laggan. It will be invaluable to everyone bent on visiting those wonderful solitudes, where the North Saskatchewan and the Athabasca Rivers have their sources in the glaciers of the continental watershed.

* *The Times Atlas* now assigns to Mount Brown 9,050 feet, the height estimated by Professor Coleman.

THE PARTITION OF SAKHALIN.*

ONE of the results of the treaty of peace between Japan and Russia was the partition of Sakhalin, so that the southern part of the island has come into the possession of Japan. The boundary between the Japanese and Russian territories is a line coinciding with the



fiftieth parallel of north latitude. As the northern or Russian part of Sakhalin is wider than the southern part, Russia retains more than one-half of the area, and, as far as is yet known, the larger area of coalfields, which thus far appear to be the most important source of mineral wealth.

Japan's territory, on the other hand, being farther south, is somewhat superior in climatic conditions, and therefore in agricultural

* Reproduced, by permission, from the Bulletin of the American Geographical Society, December, 1905.

prospects. There is little opportunity, however, for very important farming development, as the growing season is too short, even in the south, to mature cereals, though large quantities of other vegetable food may be raised.

The great attraction of the island for the Japanese was the fishing banks along parts of the coasts, which are rich in fish food, and may be developed into fisheries of very large importance. The portions of the coastline where these fisheries are of most value are marked on the map, and it will be observed that the most extensive of the fishing grounds have come into possession of the Japanese. Another source of wealth by which the Japanese will profit is the fur animals, and especially the sable. As yet the forests of Sakhalin have been little hunted for them, though the leading fur animals of Siberia abound there.

Sakhalin lies off the east coast of Siberia, between $45^{\circ} 54'$ and $54^{\circ} 24'$ N. Lat., and is separated from the mainland by the Gulf and Strait of Tartary, the latter being very narrow at about latitude 52° , and full of sandbanks. The island is about 600 miles long, and from 16 to 100 miles wide. A mountainous ridge runs along the island for the whole of its length, flanked by low sandstone hills to the east and west, but of greater extent on the east. There are two principal rivers, both reaching the sea on the east; the Tim, flowing northward into Niyi Bay, and the Poronai, flowing southward into Patience Gulf.

Mr. L. V. Dalton, who has recently visited the island, states that much of the summer weather is the finest that could be wished for, while the winters, though cold, are dry and healthful. Three-fourths of the island is covered with dense pine forests. In the north are also larch and birch, while in the south are the maple, oak, ash, bamboo, cork-tree, and other sub-tropical trees or shrubs. The fauna includes the bear, fox, sable, wolf, reindeer, and the small striped squirrel of Northern India: while in the rivers or along parts of the coast seal, salmon, and more southern fish abound. The spouting of Greenland whales is no uncommon sight on the coast washed by the Okhotsk Sea.

The total number of inhabitants is about 36,000, of whom only 4,000 are natives. Nearly all the present white population consists of convicts and Russian officials and soldiers. The Russians are for the most part confined to two districts—one around Alexandrovsk on the west coast, and the other around Khorsakovsk on Aniva Bay in the extreme south. The principal prisons are at those two places, with a large sub-prison at Rikorsk.

The native population is composed of about 2,000 Gilyaks, 1,300 Ainus, 750 Orotchons, and 200 Tungus. Scanty though the population is for the size of the island, Sakhalin has no lack of resources—vegetable, animal, and mineral. The coal of the Dui-Alexandrovsk mines has been worked for many years, and gold and other metals occur at many points, though an obstacle in the way of mining is the fact that in the northern forests the soil continues frozen below a depth of four feet.

The annexation by Japan should benefit the southern part of the island, as the convicts have had no interest in the island's resources, and so have not helped their development.

ANNUAL MEETING OF THE SOCIETY, 1906.

THE Twenty-first Annual Meeting of the Society was held in the Lord Mayor's Parlour, Town Hall, on Tuesday, June 12th, 1906, at 3-30 p.m.

The Right Hon. the Lord Mayor (Councillor J. Herbert Thewlis, J.P.) presided, and was supported by the Rev. S. A. Steinthal, F.R.G.S., Mr. D. A. Little, Alderman Wm. Norquoy, Alderman John Griffiths, Councillor C. Behrens, Messrs. Joel Wainwright, J.P., A. C. Magian, M.D., F.R.G.S., J. S. Reid, J. Howard Reed, Richardson Campbell, T. W. Sowerbutts, Robert Stewart, A. Goodwin, H. Sowerbutts, and others.

The minutes of the Twentieth Annual Meeting, held May 10th, 1905, were taken as read, having already appeared in the *Journal*.

An apology for unavoidable absence from Mr. S. Oppenheim, J.P., was read.

After proofs of the following report and balance sheet had been given to each member present, the Hon. Treasurer, Mr. David A. Little, explained and reported upon the accounts:—

REPORT OF THE COUNCIL OF THE MANCHESTER GEOGRAPHICAL SOCIETY FOR THE YEAR ENDING DECEMBER 31st, 1905.

In presenting their report of the work of the Society for the year the Council take the opportunity of congratulating the members upon two most interesting and important events which have occurred during that period. On October 15th the Society completed the twenty-first year of its operations, and on the 19th of the same month this anniversary was celebrated in a most satisfactory manner by the opening of its new premises in St. Mary's Parsonage.

The Council feel that the Society is much indebted to those members who took the initiative in the formation of the Geographical Society Building Company Limited, by whose efforts the splendid building was erected in which the Society now has its permanent home. Special thanks are due to Mr. Harry Nuttall, M.P., and Mr. E. W. Mellor, J.P., who generously took upon themselves the burden and responsibility of accepting legal liability to the ground landlords until the company could be formed and the necessary capital raised. The Society is likewise indebted to those members who severally subscribed the whole of the capital required for the erection of the building, and especially to those who, acting as directors, under the guidance of Mr. Harry Nuttall, M.P., have succeeded so admirably in the work undertaken by them.

The new Rooms afford a splendid opportunity for pushing forward the useful work of the Society. The Council trust that the members will rise to the opportunity which is presented, and by using their influence among their friends will add very materially to the membership roll.

The completion of the twenty-first year of the Society's work and occupation of the new premises were jointly celebrated at the opening

function, which took place on October 19th. The Right Hon. the Lord Mayor of Manchester (Sir Thomas Thornhill Shann) very kindly responded to the invitation of the Council, and performed the opening ceremony, being well supported by many important Manchester citizens, the majority being also well-known members of the Society.

A full account of the proceedings connected with these important events has already appeared in the Journal.

The Ordinary Meetings have been held frequently; fortnightly during the early part of the year, and weekly since the opening of the new hall.

The Council are pleased with the large attendance at the meetings, which is evidence of the satisfaction of the members with the present improved accommodation. The well-attended meetings have been most encouraging to the lecturers, and have stimulated them to do justice to the subjects with which they have dealt.

The lectures have been of a varied and interesting character, as will be seen from the following list:—

"Interesting Reminiscences of the Life of William Cowper (Poet), his Rural Walks in and about Olney, etc." Mr. John R. Smith.

"East Anglia, Cromer, the Norfolk Broads, and Ely." Mr. J. J. Gleave.

"Up the Mediterranean: Places I have visited and People I have met." Rev. Fred A. Rees (Rhysfa).

"Eastern Persia." Mr. H. R. Sykes, M.A., F.R.G.S.

"Ceylon, with a Retrospective Glance." Mr. E. W. Mellor, J.P., F.R.G.S.

"The Deccan and the Mahrattas." Mr. E. E. Lafond.

"The Tibet Expedition." Major C. H. D. Ryder, R.E., F.R.G.S.

"Through Yunnan to Tonquin." Mrs. A. J. Little.

"From Tai Yuan fu to Hankow." Mr. R. W. Swallow, B.Sc.

"Congo." Rev. R. D. Darby.

"From Capetown to Cairo." Mr. J. Howard Reed.

"The Ancient Phallic Temples of the Great Zimbabwe, Rhodesia." Mr. R. N. Hall, F.R.G.S.

"The Canadian Rocky Mountains." Mr. Hermann Woolley, F.R.G.S.

"Experiences in America." Rev. F. A. Rees.

"Marvels of the Subterranean World (The Jenolan Caves, N.S.W.)." Mr. F. Lambert, F.R.G.S.

"The Growth, Importation, Manufacture, etc., of Cotton." Mr. J. B. Brown.

"Weather Forecasting." Mr. William Marriott, F.R.Met.Soc.

"The Botanical Geography of a Pennine Stream." Mr. C. E. Moss, B.Sc.

"Geography in Schools." Mr. H. C. Martin, F.R.G.S.

"Geography in our Business." Mr. William Harper.

"Geography in our Pleasures." Mr. J. Howard Reed.

The excursions arranged were satisfactory, the most successful one being that under the guidance and hospitality of our esteemed friend and hon. member, Mr. Joel Wainwright, J.P.

It has only been possible during the year to issue the Journal for the last nine months of 1904.

By issuing the volumes for 1905 and 1906 in half-yearly parts instead of quarterly ones as usual, the Council hope to bring the Journal up to date, but this will only be possible if funds are made available by a large accession of new members in the immediate future.

The Council have again to regret a heavy loss by death. Among the members whose decease is deplored may be mentioned:—

Lady Leech	Mr. Wm. Johnson
Mr. Edward Behrens	Mr. J. R. Pascoe
Mr. Thomas Banks	Mr. Herbert Philips, J.P.
Councillor S. Cowan	Mr. H. M. Steinthal
Mr. Walter Curbstone	Mr. J. W. Watkinson
Mr. Rudolph Dehn	Mr. H. Wood
Mr. J. T. Doyle	

The additions to the Library, Map Room, and Museum have been continued during the year, consisting mainly of exchanges for the Journal of the Society.

The Victorians have again given active service, chiefly by lecturing, for the affiliated societies. Their annual report is presented herewith.

The Council gratefully acknowledge the services of Mr. J. D. Wilde, M.A., of Highbury House School, St. Leonards-on-Sea, in kindly drawing up the three sets of questions for the children, which have been issued with the Notices to Members, and also for examining the replies which have been received.

Mr. Wilde's report will be found on page 78.

The Council would be encouraged if a larger number of the children of the members would take an interest in these geographical competitions, and make a point of regularly replying to the questions set. They feel that an interesting and useful educational opportunity is lost by those who neglect the questions, and they appeal to the parents to endeavour to stimulate the young people in so useful an effort.

The balance sheet for the year, with the report of the Hon. Auditor, is presented herewith.

With a view to the new premises being made as comfortable as possible on occupation, an appeal was made to the members for a special fund to meet the cost of furnishing, and to liquidate the outstanding debt with which the Society was saddled. The Council asked for £600, but, although a considerable number of the members responded very liberally, only £341 has up to the present been subscribed. The result has been that the furnishing committee have not been able to carry out the work on such a scale as the premises demand, although the best has been done with the money at their disposal. The fund, however, is still open, donations are still being received, and the Council trust that those who have not hitherto subscribed will see their way to do their part. The Council desire heartily to thank those who have so liberally supported this fund, tendering their thanks to Mr. E. W. Mellor for the valuable electric lantern presented by him, and also to Mr. J. J. Gleave for a suite of furniture for the Members' Room.

There was an exceptional outlay incurred in connection with the opening and anniversary celebrations, but otherwise the expenses for the year have been reduced to the lowest point possible. It is evident that if the work of the Society is to be carried on in a satisfactory manner an increased income is a necessity. The Council feel that now that the Society has secured such satisfactory and well-appointed premises they can with confidence appeal to the members to do all they can to enlarge the membership roll. As was stated by Mr. Harry Nuttall, M.P., on the occasion of the opening, the city of Manchester should certainly be able without difficulty to supply a membership of at least two thousand, and this is the figure at which the Council with confidence aim ultimately to attain.

Even half this number would place the Society in a very satisfactory position, and the members are reminded that if each one of them would make a point of introducing one other during the coming year the Society would be in a very enviable position. It is felt that with a united effort such a result is well within reach, and the Council earnestly request each one to do his or her part. With the present inadequate income the work of the Society is crippled and retarded, whilst any extension of effort is out of the question. If, however, the members will only do their individual part the future is filled with promise.

THE REPORT OF THE HON. EXAMINER IN GEOGRAPHY.

Again the time has come round for me to examine the answers of your young people to the questions set them in the Society's publications. Owing to the changes in the issue of these publications the number of questions has been much less than in former years, only three having been set. On the other hand, the number of candidates has increased, and has exceeded not only last year's figures, but even those of the year before. The improvement in the standard of excellence which I reported last year has been maintained, and many of the maps submitted (which I am sending with this report) are really very good, especially those of the East Indian Archipelago. These maps show that a simple intelligent method of projection has been taught and learnt. On the other hand, the maps of the North Sea show that there are still geographers who have not grasped the fact that a degree of longitude in that locality is less than a degree of latitude.

Sixteen candidates have sent in replies, and all have answered every one of the three questions. The maximum of marks attainable was 100, and the actual numbers attained are as follows:—

JUNIORS (UNDER 10).

None.

MIDDLE (10 TO 12).

F. Davenport	48	
T. Peacock	60	
E. Wallwork	60	
B. Worsley	83	
J. Broadhurst	89	<i>Prize.</i>

SENIORS.

F. Hollingworth	54	
W. Bowler	57	
E. Richmond	58	
A. Appleton	62	
A. Peacock	66	
R. Bentley	84	
W. Baguley	88	
H. Bentley	90	
F. Wood	95	
A. Davenport	96	
E. Halliwell	98	<i>Prize.</i>

It will be noticed that the competition for the first place in the Senior Division is very close, and that a wide gap follows the second in the Middle. If the funds at your disposal permit, I shall be pleased to recommend A. Davenport, F. Wood, and B. Worsley for additional prizes.

JAS. D. WILDE, M.A.,

Principal of Highbury House School,
St. Leonards-on-Sea, Examiner.

REPORT OF THE "VICTORIANS," 1905-1906.

The useful work of lecturing upon subjects of geographical interest has been carried on as in former years by the members of this section of the Manchester Geographical Society. They have been the means of reminding the Literary Societies and Educational Committees existing in the populous towns surrounding Manchester of the great value of the Central Executive in its object to disseminate geographical information, and have also inspired many to enrol themselves as permanent members of the Society.

All the lecturers gratuitously volunteer their services, and illustrate the addresses by specially-made lantern slides. The "Victorians" possess about 5,000 of these slides, which may be said in the aggregate to represent the vicissitudes of human life and habitations, scenery and surroundings, over every portion of the discovered world.

One feature of the work of the "Victorians" is to undertake to interest and amuse the children of members one night during the session—usually in January—and this Children's Party was again a great success, being anticipated for weeks, and especially by those boys and girls who have competed for the prizes given by the Society for answering questions in geography during the previous year. Mrs. Sowerbutts, widow of the late esteemed Secretary, was kind enough to distribute the prizes, and the customary cake was presented by Professor Swallow, of China.

In order to increase the number of lectures, it is essential that the list of lecturers be strengthened, and the "Victorians" invite any of

the members of the Geographical Society who are willing to aid in this educational work to send their names to the Hon. Secretary.

The following is a list of lectures delivered during the season 1905-1906 :—

October, 1905.

- 23—Leigh (Literary Society). "From Capetown to Cairo." Mr. J. Howard Reed.
- 24—Middleton (Literary and Scientific Society). "Up the Mediterranean." Rev. F. A. Rees (Rhysfa).
- 28—Highbury House School. "South Africa." Mr. J. Howard Reed.
- 30—Farnworth-with-Kearsley P.C.M.I. Society. "Three Hundred Miles' Tour in Devon." Mr. R. Stewart.

November

- 8—Whitefield (Miss Philips). "Western Highlands and Islands of Scotland." Mr. J. S. Reid.
- 14—Heywood (Rev. A. Redman). "From Capetown to Cairo." Mr. J. Howard Reed.
- 14—Middleton (Literary and Scientific Society). "Connemara and the Western Highlands of Ireland." Mr. M. W. Thompstone.
- 16—Stretford (Rev. F. A. Rees). "Japan: the Land of the Rising Sun." Mr. J. Howard Reed.
- 23—Cheetham Hill (St. Mark's Literary Society). "Belgium." Mr. J. Howard Reed.

December

- 9—Crossley Sanatorium (Mr. C. Roeder). Mr. J. Howard Reed.
- January, 1906.

- 15—Leigh (Literary Society). "Interesting Reminiscences of the Life of William Cowper, Poet, etc." Mr. John R. Smith.
- 17—Patricroft (Eccles Co-operative Society). "Scottish Scenery, Song, and Story." Mr. J. S. Reid.
- 31—Urnston (Eccles Co-operative Society). "Japan: the Land of the Rising Sun." Mr. J. Howard Reed.

February

- 5—Farnworth-with-Kearsley P.C.M.I. Society. "Interesting Reminiscences of the Life of William Cowper, Poet, etc." Mr. J. R. Smith.
- 7—Whitefield (Miss Philips). "Isle of Man." Mr. H. C. Martin, F.R.G.S.

March

- 26—Farnworth-with-Kearsley P.C.M.I. Society. "From Capetown to Cairo." Mr. J. Howard Reed.

REVENUE ACCOUNT.

Date.

YEAR ENDING DECEMBER 31st, 1905.

Ctr.

	£	s.	d.	£	s.	d.
To Expenses of Meetings	99	5	9	By Members' Subscriptions—		
" Special Expenses, Opening of New Premises	50	1	1	Life	10	10 0
" Journal, less Advertisements	95	2	10	Ordinary	381	3 0
" Rent, Gas, Water, and Insurance	55	13	3	Associate	30	9 0
" Salaries	85	10	0	Societies	23	2 0
" Books, Maps, Binding, and Library	5	0	6			445 4 0
" Sundry Expenses, Stationery, Postages, Telegrams, Carriage, Wages, Coal, &c.	96	12	4	" Bank Interest		0 3 9
" Commission and Expenses, New Members, and Collection of Subscriptions	18	18	6	" Balance Deficit on Year 1905		61 16 8
" Education Committee's Expenses	1	0	2			
	£507	4	5			£507 4 5

BALANCE SHEET, DECEMBER 31st, 1905.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Subscriptions paid in advance	30 19 6	By Subscriptions in arrear	43 8 0
" Amounts owing to Sundry Creditors	155 17 9	" Cash at Bank	9 11 5
" Furnishing New Premises and Debt Fund	77 18 5	" Cash in hand	6 10 2
		" Cash at Bank—Furnishing, &c., Fund	77 18 5
		" Balance deficit from 1904	163 15 8
		Add loss on year 1905	61 16 8
			225 12 4
		Less amount transferred from Special Fund...	98 4 8
			127 7 8
	£264 15 8		£264 15 8

NOTE.—The Furniture, Fittings, Books, Maps, &c., in the Library, Stock of *Journals*, Lanterns, and Slides are not taken into account as Assets in the above Statement. There are 33 Life Members, whose subscriptions have been taken as Revenue.

Audited and found correct,

THEODORE GREGORY (F.C.A.),

Honorary Auditor.

March 27th, 1906.

LIST OF DONATIONS.

(See page 83.)

	£	s.	d.		£	s.	d.
Mr. Harry Nuttall, M.P.,				Rev. S. A. Steinthal, F.R.G.S.	2	2	0
F.R.G.S.	25	0	0	Mr. John Walkden, C.C.	2	2	0
Mrs. Rylands	25	0	0	Mr. Fritz Zimmern	2	2	0
Mr. Joel Wainwright, J.P.	25	0	0				
Sir W. H. Houldsworth, Bart..	20	0	0	Mr. F. Radcliffe	2	0	0
The late Mr. H. Philips, J.P....	20	0	0	Rev. Canon F. C. Smith, M.A.,			
				F.R.G.S.	2	0	0
Sir Wm. Mather.....	10	0	0	The late Captain Chas. Hiffe...	1	5	0
Mr. W. J. Robertson	10	0	0				
Mr. Hermann Woolley, F.R.G.S.	10	0	0	Mr. Richard Arnistead	1	1	0
				Mr. C. H. Bellamy, F.R.G.S....	1	1	0
Mr. A. J. S. Bles.....	5	5	0	Mr. J. C. Blake, F.R.G.S.....	1	1	0
Mr. J. C. Chorlton, J.P.....	5	5	0	Mr. Wm. Bradshaw	1	1	0
Mr. C. E. Schwann, M.P.	5	5	0	Mr. C. Brier	1	1	0
				Mr. H. Briggs	1	1	0
Sir F. Forbes Adam, C.I.E. ...	5	0	0	Mr. W. H. Buckley, J.P.	1	1	0
Mr. W. A. Arnold	5	0	0	Miss Crowther.....	1	1	0
Mr. W. J. Crossley, M.P.	5	0	0	Mr. C. J. Davies.....	1	1	0
Mr. Geo. Galloway, J.P.	5	0	0	Mr. T. S. Deakin.....	1	1	0
Mr. E. W. Greg, J.P., C.C.,				Alderman James Duckworth,			
F.R.G.S.	5	0	0	M.P., F.R.G.S.	1	1	0
Mr. W. G. Groves, J.P.....	5	0	0	Mr. J. G. Groves, J.P.	1	1	0
Mr. George Hadfield, J.P.....	5	0	0	Councillor A. Hailwood	1	1	0
Mr. N. Kolp.....	5	0	0	Mr. J. Howard Hall	1	1	0
Mr. D. A. Little	5	0	0	Mr. Wm. Hawkins	1	1	0
Mr. F. Mehl.....	5	0	0	Alderman W. T. Heap, J.P. ...	1	1	0
Mr. E. Delmar Morgan, F.R.G.S.	5	0	0	Mr. R. P. Hewit	1	1	0
Mr. S. Oppenheim, J.P.	5	0	0	Mr. J. Hindle, L.R.A.M.	1	1	0
Mr. J. B. Parkinson	5	0	0	Mr. Wm. Hodgson	1	1	0
Mr. Edward Pilkington, J.P....	5	0	0	Alderman Sir Jas. Hoy, J.P....	1	1	0
Councillor John Snaddon	5	0	0	Mr. R. H. Joynson, J.P.	1	1	0
Mr. G. S. Woolley ..	5	0	0	Mr. James Lancaster	1	1	0
				The late Lady Bosdin Leech...	1	1	0
Mr. F. Ashworth, J.P.	3	3	0	Mr. J. T. Lewis, J.P.....	1	1	0
Surgeon-Major W. G. Black,				Rev. S. McFarlane, LL.D.....	1	1	0
F.R.C.S.E.	3	3	0	Mr. H. C. Martin, F.R.G.S. ..	1	1	0
Mr. N. Bradley, J.P.	3	3	0	Mr. A. Neil	1	1	0
Mr. C. P. Scott, J.P.	3	3	0	Mr. Jesse Neild	1	1	0
Mr. George Thomas	3	3	0	Mr. T. Newbigging, C.E.	1	1	0
				Mr. H. C. Pingstone	1	1	0
Mr. John Ainsworth, C.M.G....	2	2	0	Mr. C. E. Reade	1	1	0
Mr. J. B. Close Brooks	2	2	0	Mr. J. Howard Reed	1	1	0
Colonel W. W. Clapham	2	2	0	Mr. James Robertshaw	1	1	0
Mr. T. A. Crompton	2	2	0	Mr. G. H. Seed	1	1	0
Alderman R. Gibson, J.P.....	2	2	0	Mr. John R. Smith.....	1	1	0
Councillor T. Hassall, J.P.....	2	2	0	Councillor J. H. Thewlis (The			
Mr. W. Booth Leech	2	2	0	Right Hon. the Lord Mayor			
Brig.-Gen. Sir J. R. L. Mac-				of Manchester)	1	1	0
donald, R.E., K.C.I.E.	2	2	0	Mr. G. Hervey Wood	1	1	0
Mr. A. Midgley	2	2	0	Mr. J. Woolfenden, jun.	1	1	0
Oldham Free Public Library...	2	2	0				
Mr. Lawrence Pilkington	2	2	0	Right Rev. Monsignor Gadd,			
Rev. F. A. Rees	2	2	0	V.G.	1	0	0

LIST OF DONATIONS—(Continued.)

	£	s.	d.		£	s.	d.
Mr. H. Kirkpatrick, J.P.	1	0	0	The late Miss E. M. Clerke ...	0	10	0
Mr. T. F. Wainwright	1	0	0	Miss Collinge	0	10	0
				Mr. A. Goodwin	0	10	0
Mrs. C. H. Bayley	0	10	6	Mr. T. Scott	0	10	0
Mr. G. A. Haze	0	10	6	Mr. E. Steinthal	0	10	0
A. E. L.	0	10	6				
Mr. H. Sowerbutts	0	10	6	Rev. P. A. McDermott	0	5	0
Miss M. W. Wallace	0	10	6	Miss Woolston	0	5	0

The Right Hon. the Lord Mayor, in moving the adoption of the report and balance sheet, said that it seemed to him that the work of the Society was so good that criticism was needless. It should not be difficult, by a definite effort, to secure all the additional members that were required, and he hoped that that effort would be made. Since the new Rooms were opened the meetings had been more largely attended, showing that increased interest was being evinced in the proceedings of the Society. Personally, although he had not been able to attend, one of his great delights in connection with the Society was to read the *Journal* from time to time. He felt sure that it needed only a little commendation to the citizens to bring about a large accession of members.

The Chairman of the Council (the Rev. S. A. Steinthal), in seconding the motion, which was adopted, remarked that they might fairly claim that in no season had more interesting or valuable papers been contributed than during the past year, and that this fact had been appreciated was shown by the large attendances. They had, however, to complain that Manchester and neighbourhood had not accorded to the Society that full measure of support which was wanted to carry out the great objects which they had in view. He sincerely hoped that there would be a large increase in the membership, so that the Treasurer, when he appeared before them at the next Annual Meeting, would have a more cheerful account to give of the finances of the Society than he was able to do on the present occasion. Mr. Steinthal added that he thought they were justified in saying that the present year showed a larger number of members as compared with 1905, so that at all events some advance had been made since the opening of the new Rooms.

The Hon. Secretary (Mr. Reed) read the following recommendation of the Council :—

“That the retiring officers and Council be re-elected, with the addition of Messrs. W. J. Crossley, M.P., Alderman James Duckworth, M.P., F.R.G.S., and E. W. Mellor, J.P., F.R.G.S., to the Vice-Presidents, and Messrs. J. McFarlane, M.A., and H. C. Martin, F.R.G.S., to the Council.”

Mr. Joel Wainwright, J.P., spoke in very appreciative terms of the services of the officers and Council of the Society during the past year in the special circumstances occasioned by the opening of the new Rooms and the celebration of the 21st anniversary, and said that it gave him very great pleasure to move the following resolution :—

“That the best thanks of this meeting be given to the officers and Council for their services during the past year, and that the retiring officers and Council, together with the five named, as recommended by the Council, be elected as the Council and officers for the ensuing year.”

Mr. J. S. Reid, in seconding the resolution, also expressed his appreciation of the work of the Society during the year, and of the indebtedness of the members to their venerable Chairman for his long and continued services to the Society.

The officers and Council, as given in the following list, were elected unanimously :—

President.

His Royal Highness the PRINCE OF WALES, K.G.

Vice-Presidents.

His Grace the DUKE OF DEVONSHIRE, K.G.
The Right Hon. the EARL OF DEREY, K.G.
The Right Hon. the EARL EGERTON OF TATTON.
The Right Rev. the BISHOP OF SALFORD.
The Right Hon. the LORD MAYOR OF MANCHESTER.
His Worship the MAYOR OF OLDHAM.
His Worship the MAYOR OF SALFORD.
The VICE-CHANCELLOR OF VICTORIA UNIVERSITY.
The Right Rev. MONSIGNOR GADD, V.G.
Sir W. H. DOULDSWORTH, Bart.
The Hon. W. ROTHSCHILD, M.P.
Sir H. F. DE TRAFFORD, Bart.
Sir FRANK FORBES ADAM, C.I.E.
Sir W. H. HOLLAND, M.P.
Alderman Sir BOSDIN T. LEECH, J.P.
Sir JOSEPH LEIGH, J.P.
Sir WILLIAM MATHER, J.P.

Mr. FREDERIC BURTON.
Mr. J. F. CHEETHAM, M.P.
Professor T. H. CORE, M.A.
Mr. W. J. CROSSLEY, M.P.
Professor W. BOYD DAWKINS, J.P., F.R.S.
Alderman JAMES DUCKWORTH, M.P., F.R.G.S.
Mr. J. G. GROVES, J.P.
Mr. J. S. HIGHAM, M.P.
Mr. E. W. MELLOR, J.P., F.R.G.S.
Mr. HARRY NUTTALL, M.P., F.R.G.S., *Vice-Chairman of the Council.*
Mr. S. OPPENHEIM, J.P.
Mr. J. HOWARD REED.
Mr. C. E. SCHWANN, M.P.
Mr. C. P. SCOTT, J.P.
Mr. H. SOWLER, J.P.
Rev. S. A. STEINTHAL, F.R.G.S., *Chairman of the Council.*
Mr. J. D. WILDE, M.A.
Mr. F. ZIMMERN.

Trustees.

Mr. H. NUTTALL, M.P., F.R.G.S.

Mr. SYDNEY L. KEYMER, F.R.G.S.

Mr. E. W. MELLOR, J.P., F.R.G.S.

Honorary Treasurer.

Mr. DAVID A. LITTLE.

Honorary Secretaries.

Mr. F. ZIMMERN.

Mr. J. HOWARD REED.

Mr. C. A. CLARKE (Hon. Sec. (Vic.)).

Council.

Mr. J. E. BALMER, F.R.G.S.
Mr. JAS. BARNINGHAM.
Mr. G. T. BOWES.
Mr. J. C. CHORLTON, J.P.
Mr. C. COLLMANN,
Consul for German Empire.
Lieut.-Col. H. T. CROOK, J.P., C.E.
Major E. W. GREG, J.P., C.C., F.R.G.S.
Mr. Councillor T. HASSALL, J.P.
Mr. A. J. KENNEDY, F.R.G.S.

Mr. N. KOLP.
Mr. JOHN MCFARLANE, M.A.
Mr. H. C. MARTIN, F.R.G.S.
Mr. T. C. MIDDLETON, J.P.
Mr. R. C. PHILLIPS.
Mr. Councillor JOHN SNADDON.
Mr. T. W. SOWERBUTTS.
Mr. GEORGE THOMAS.
Mr. HERMANN WOOLLEY, F.R.G.S.

Mr. David A. Little moved, Mr. J. Howard Reed seconded, and it was unanimously resolved—"That the best thanks of the Society be tendered to Mr. Theodore Gregory; F.C.A., for his services as Hon. Auditor, and that he be re-appointed for the coming year."

It was moved by Dr. A. C. Magian, F.R.G.S., seconded by Alderman John Griffiths, and resolved unanimously and with applause—"That the best thanks of the meeting be tendered to the Lord Mayor for the use of his parlour, and more especially for his kindness in presiding over the meeting."

PROCEEDINGS OF THE SOCIETY.

JANUARY 1ST TO JUNE 30TH, 1906.

The 713th Meeting of the Society was held in the Geographical Hall, on Saturday, January 6th, 1906, in the form of a party for the children of the members.

The Victorians received the children at 5 p.m. Refreshments and games occupied the first hour, and then there was an exhibition of lantern slides, kindly lent by Mr. F. J. Payton.

At 6-30 p.m. the "Scarlet Minstrel Troupe" gave a very interesting entertainment, much enjoyed by all present.

At 7-30 p.m. Mr. C. A. CLARKE read the Report of the Hon. Examiner, Mr. J. D. WILDE, M.A. (see page 78), and Mrs. ELI SOWERBUTTS presented the prizes awarded by Mr. Wilde.

Mrs. SOWERBUTTS, with the help of the Victorians, cut and distributed the Christmas Cake, which was again kindly provided by Professor R. W. Swallow, B.Sc., of Tai Yuan fu, China.

A hearty vote of thanks was passed to the "Scarlet Minstrel Troupe, Mrs. Eli Sowerbutts, and the other helpers. The CHAIRMAN of the Minstrel Troupe made a suitable response.

The evening's proceedings concluded with games and dancing.

The 714th Meeting of the Society was held on Tuesday, January 9th, 1906, at 7-30 p.m. In the chair, Mr. R. GRAHAM BURTON.

The Minutes of the Meetings held on December 19th, 1905, and January 6th, 1906, were approved.

The election of the following five members was announced:—

ORDINARY: MESSRS. I. P. Carson, George Ginger, Alfred Balmforth, and Harold Feber.

ASSOCIATE: Miss Lily Warburton.

The presentation by Mr. N. Kolp of a fully-illustrated book, entitled "Japon," by M. Félix Régamey, was mentioned by the Chairman.

Mr. MATTHEW INGRAM gave an account of a business visit to Denmark. The address was illustrated with lantern slides.

Mr. R. C. PHILLIPS moved, and Mr. RICHARDSON CAMPBELL seconded, a vote of thanks to Mr. Ingram for his address, and it was carried.

The 715th Meeting of the Society was held on Tuesday, January 23rd, 1906, at 7-30 p.m. Mr. J. HOWARD REED in the chair.

The Minutes of the Meeting held on January 9th were approved.

The election of the following members was announced:—

ORDINARY: Messrs. Thomas Riley and James Johnson.

ASSOCIATE: Mrs. Knox Taylor.

Captain J. STEPHENSON, of the Indian Medical Service, addressed the members on "The Punjab and its People." (See page 26.) The address was illustrated with lantern slides.

Councillor JOHN SNADDON moved, Mr. J. J. GLEAVE seconded, and it was resolved, that a hearty vote of thanks be given to Captain Stephenson for his interesting address.

The 716th Meeting of the Society was held on Tuesday, February 6th, 1906, at 7-30 p.m. Alderman Sir BOSDIN T. LEECH, J.P., Vice-President, in the chair.

The Minutes of the Meeting held on January 23rd were taken as read.

The CHAIRMAN announced the election of Field-Marshal the Right Hon. Earl Roberts of Kandahar, V.C., K.G., etc., as an honorary member, and Mr. C. Owen Hockin as an ordinary member.

Mr. A. C. MAGIAN, M.D., F.R.G.S., addressed the Society on "A Visit to Japan." (See Vol. XXI., page 140.) The address was illustrated with a large number of lantern slides.

Mr. R. C. PHILLIPS moved, Mr. S. MASSEY seconded, and it was unanimously resolved, that a hearty vote of thanks be given to Dr. Magian for his interesting address.

Dr. MAGIAN responded.

The 717th Meeting of the Society was held on Tuesday, February 13th, 1906, at 7-30 p.m. In the chair, Mr. R. COBDEN PHILLIPS.

The Minutes of the Meeting held on February 6th, 1906, were taken as read.

Mr. J. B. BROWN gave the second part of his address on "The Growth, Importation, Manufacture, etc., of Cotton; the Staple Trade of Lancashire." He dealt more particularly with the manufacture of cotton and of the value of the trade to Manchester, illustrating his remarks with a large number of original lantern slides.

Mr. J. C. ATKINS (Secretary of the British Cotton Growing Association) moved, and Mr. McNEIL seconded, a cordial vote of thanks to Mr. Brown for his interesting address, and it was supported by Mr. ISHERWOOD, and unanimously carried.

Mr. BROWN responded.

The 718th Meeting of the Society was held on Friday, February 16th, 1906, at 7-30 p.m. In the chair, Mr. C. A. CLARKE.

The Minutes of the Meeting held on February 13th, 1906, were approved.

The CHAIRMAN announced the election of the following members:—

ORDINARY: Miss Mathison, Mr. Robert Poppleton, Mr. James Wallworth, Mr. Hy. Forsyth, Mr. F. W. Marrs, M.A., and Mr. J. Parker Milbourne.

ASSOCIATE: Miss G. Bolivar.

Mr. ROBERT W. SWALLOW, B.Sc., addressed the Society on his "Chinese Experiences." The address was illustrated with lantern slides.

A vote of thanks to Professor Swallow for his very interesting address was moved by Mr. M. W. THOMPSTONE, seconded by Mr. R. C. PHILLIPS, supported by Mr. W. HARPER, and carried unanimously.

The 719th Meeting of the Society was held on Tuesday, February 20th, 1906, at 7-30 p.m. In the chair, Mr. J. HOWARD REED.

The Minutes of the Meeting held on February 16th, 1906, were approved.

A lecture, entitled "Roman Remains, their Witness to History," was delivered by the Rev. S. HAILSTONE, M.A. (See page 41.) The address was illustrated with lantern slides.

A cordial vote of thanks to the lecturer for his interesting address was moved by Mr. S. OPPENHEIM, J.P., seconded by Mr. J. J. GLEAVE, and carried unanimously.

The 720th Meeting of the Society was held on Tuesday, February 27th, 1906, at 7-30 p.m. In the chair, Mr. DAVID A. LITTLE.

The Minutes of the Meeting held on February 20th, 1906, were taken as read.

The Rev. P. M. HIGGINSON, M.A., gave an address on a visit to "Baalbek," with special reference to recent discoveries there. The address was illustrated with specially-prepared lantern slides.

A vote of thanks to the lecturer for his address was moved by Mr. J. HOWARD REED, seconded by Mr. JOHN R. SMITH, supported by Messrs. J. J. GLEAVE, Councillor J. SNADDON, and JOHN MATHER, and carried.

The 721st meeting of the Society was held on Tuesday, March 6th, 1906, at 7-30 p.m. In the chair, Mr. R. C. PHILLIPS (in the unavoidable absence of Sir W. H. Vaudrey, J.P.).

The Minutes of the Meeting held on February 27th, were approved.

The election of the following new members was announced:—

ORDINARY: Messrs. G. E. Walmsley, A. J. Ingham, Wm. Sivewright, Jacob Earnshaw, John A. Earnshaw, R. H. Prussmann, and Rev. Rd. Eubank.

ASSOCIATE: Miss Emma Lawton.

Dr. T. FRANK SOUTHAM, of Bowdon, addressed the Society on "Some South Sea Islands—Reminiscences." The address was fully illustrated with lantern slides.

A cordial vote of thanks to Dr. Southam was passed on the proposition of Mr. R. T. MILLERS, seconded by Mr. C. A. CLARKE.

The 722nd Meeting of the Society was held on Tuesday, March 13th, 1906, at 7-30 p.m. Mr. R. COBDEN PHILLIPS in the chair.

The Minutes of the Meeting held on March 6th, were approved.

Mr. M. W. THOMPSTONE gave an address on "A Ramble Through an Undiscovered Country, and the English Holland." Illustrated with original lantern slides.

A cordial vote of thanks to Mr. Thompson for his very interesting address was moved by Mr. GEO. PEARSON, seconded by Mr. ROBERT STEWART, supported by Mr. C. A. CLARKE, and passed unanimously.

The 723rd Meeting of the Society was held on Tuesday, March 20th, 1906, at 7-30 p.m. Mr. J. HOWARD REED in the chair.

The Minutes of the Meeting held on March 13th were approved.

The election of Miss R. Bentley and Mr. M. Silverstone as ORDINARY members was announced.

Dr. ROBERT GIBSON gave a lecture entitled "In and Around Hong Kong," illustrated with specially-prepared lantern slides.

A very cordial vote of thanks to Dr. Gibson for his interesting address was moved by Councillor J. SNADDON, seconded by Mr. R. C. PHILLIPS, supported by Mr. B. I. BELISHA, and passed unanimously.

The 724th Meeting of the Society was held on Friday, March 30th, 1906, at 7-30 p.m. In the chair, Mr. HERMANN WOOLLEY, F.R.G.S.

The Minutes of the Meeting held on March 20th were approved.

The election of Mr. H. Preston as an ORDINARY member was announced.

The REV. WALTER WESTON, M.A., F.R.G.S., addressed the members on "Six Seasons of Climbing and Observation in the Southern Alps of Japan." The address was illustrated with lantern slides coloured by Japanese artists.

The following Report is from the *Manchester City News*:—

THE MOUNTAINS OF JAPAN.

The mountain ranges of Japan, from their general formation, may be divided into two main systems, the northern and the southern, or the Russian and the Chinese. The Chinese or southern system is connected with South-east China, and runs north-east by way of Formosa up into the mainland of Japan. The Russian or northern, known to Japanese geographers as the Karafuto system, enters Japan from the north, and runs south-west until it meets the southern system in the middle of Japan. It thus becomes, so to speak, the geological battleground of the two conflicting chains, the Russian and the Chinese. It is here, in the broadest part of the main island, that the deepest and wildest valleys are cleft, and the mountains rise to their loftiest heights in the picturesque summits known as the Japanese Alps. To-night I am to speak of journeys during eight seasons in the southern half. This portion may be called the mountains of Kosku, from the remarkable province in or on the borders of which most of the principal peaks are situated. The average height of the loftiest peaks is about ten thousand feet, but the character of the

scenery, grand though it is, is hardly so wild and rugged as that of the barer, less richly-wooded mountains in the northern half of the Japanese Alps. The nearest and most accessible town of importance is Koshu on the east, the capital of the province of that name. Koshu, which has a population of forty thousand, is one of the most progressive towns in Japan. It stands in a broad, fertile, mountain-circled plain, once probably the bed of an ancient lake, now dotted all over with thriving villages. It is the centre of a considerable commerce in silk, grapes, and sugar. Some of the silk filatures employ several hundred persons, chiefly girls, whose hours are said to be fifteen per day without a break for meals or even a Sunday holiday, and this continues all the year round with the exception of two months in the winter.

AN ARDUOUS CLIMBING FEAT.

During my many expeditions, of which the climb of Kaigane, 10,334 feet, the highest of the Koshu range, and the culminating peak of the central mass, may serve as a specimen of mountain travel in this region, I was accompanied by several sturdy native hunters. Up this fine peak I made the first ascent (by a foreign traveller) three years ago, repeating the climb last summer. A short day's journey westward across the Kofu plain, took me through a curious natural gateway in the foothills up a beautiful valley where Ashiyasu lies, 2,200 feet above the sea level, a hamlet of dark scattered chalets that cling with difficulty to the steep and broken slopes and ledges which rise above a wild torrent bed. A fatiguing scramble of five hours in a scorching sun placed us on the top of a ridge, 6,500 feet high; a rough descent of four hours took us down to the bed of a picturesque torrent, and a still harder struggle of four hours was needed before we could shelter for the night higher up the valley. Sometimes we had to wade from side to side up to our waists in the ice-cold stream, or leap from rock to rock at the side. Occasionally we had to spend half an hour in felling and fixing a tree trunk, twenty or thirty feet in length, to serve as a bridge. Daylight was dead, and the ravine wrapped in darkness before we could gain our bivouac, and the last hour's work was only accomplished by the faint glimmer of an Alpine lantern, when a slip, unroped as we unavoidably were, would have plunged one into the roaring, swirling torrent with little chance of rescue. Our fourteen hours' scramble at last ended at a spot where, at 5,500 feet, in the tangled undergrowth and trees on the left bank of the stream, a dilapidated hut of brick-bark betokened a shelter used by hunters and woodcutters, the sole visitors to this lonely valley. Here we spent two comfortable nights. On the second morning I started at early dawn with my two strongest men, leaving the third to guard the hut and our belongings in our absence.

ASCENT OF THE HIGHEST PEAK.

Huzan, the "Phoenix Peak," is one of the most striking summits in the granite range. Until last summer it was held to be inaccessible to human foot. To it the comment of a native Japanese geographer, speaking of this range, applies with striking force: "This is one of the most mountainous regions, and there are in it trackless wilds, for these mountains are almost beyond

the ability of human legs to climb." A hard climb northward of eight hours lauded us at our bivouac, a ruined woodman's shelter on the south flank of Huzan. The altitude is eight thousand feet, and a crystal spring of ice-cold water rises hard by. A three hours' climb the next morning led us over the intervening peak, 9,700 feet, to a low saddle between it and Huzan. Here my three hunters were thrown in a state of the greatest excitement by the appearance, on a sort of promontory jutting into a wild ravine on the left, of a chamois. Two of them flew off like monkeys to stalk the animal, and afterwards returned with the carcase of a fine buck about five years old, weighing seventy pounds. During their absence I continued the ascent with my remaining companion. Of the success of the enterprise he proved sceptical, and grew even sarcastic as I urged him on. Up to a certain ledge at the base of the final pinnacle I induced him to come, but he stopped and refused to advance any further. Alone, therefore, I went on, the rocks, though steep, giving good hold everywhere, until at length I reached a small shelf two feet by eighteen inches, beyond which further progress seemed impossible. Above rose fifty feet of smooth granite at an angle of eighty degrees, with a jutting block near the top. Fastening a stone securely to the end of one hundred feet of Alpine rope, I succeeded, after half an hour's tiring effort, in lodging this securely in the top of a tempting crack thirty-five feet above me. Holding the rope in my left hand to steady myself, I then managed to worm my way upward till further progress was barred by the overhanging block, which pushed me out and compelled me to loose the rope to obtain a firmer grip. A short rest for breath, then a final struggle, and I was over the obstacle. Above, the rock, though quite perpendicular, was fairly rough and afforded good hold. The last twenty feet was soon accomplished, and I stood on a spot hitherto untrodden by human foot. My hunter gazed up from far below, half in alarm and half in amusement, but his relief when I rejoined him was quite touching to witness.

POLITENESS AND HOSPITALITY OF THE PEOPLE.

There is a remarkable difference in the climatic conditions prevailing in the northern and southern parts of the Japanese Alps. In the former, near the Sea of Japan, the temperature is hotter in summer and colder in winter than in the latter, towards the Pacific. The simple, unaffected politeness and kindly hospitality one receives everywhere leave the most delightful memories behind. Not only the village headmen, but even the local country police on the outskirts of the ranges are always ready to further one's plans to the best of their power. A native to whom I once applied for information actually volunteered to climb the mountain with me, and proved a most excellent companion. He was very diminutive, but extremely dignified, and imperturbable under all circumstances. Even when one night I unluckily rolled out of my hammock and landed somewhat heavily on him as he lay snoring peacefully below, his sole comment was a word of polite apology, "I am so sorry to have been in your honourable way." As a rule the peasant folk are honest, a feature in which they distinctly excel the ordinary commercial classes in many of the larger more "civilised" towns. On our expeditions my hunters were never idle, and even on

off-days in camp they rarely rested. Nearly all their spare time was spent in fishing, making toys, and playing games, or occasionally writing notes of the journey. They invariably showed great interest in our country, and for men of little education asked quite intelligent questions. The headman, a sort of village Mayor, is a useful factor in the organisation of the country-side. Two years ago when engaged in the work of distributing relief sent by the foreign residents in Japan and China to alleviate the distress during the Aomori famine in northern Japan I was brought into close contact with many of them. During the preliminary work of investigation I found it possible almost at a moment's notice to obtain through the headman of any village the minutest information of the circumstances of any given family. On every hand one is reminded that Western civilisation has come to a people already possessing, to a high degree, those very capacities and faculties of assimilation that must enable them to adapt for their own purposes whatever they have adopted from the resources of Western people. To what extent they will succeed, however, as permanent Colonists on the mainland of Asia need not now be discussed. What is certain is that the new fields acquired by Japan on the mainland seem very favourable for the experiment. No less than seven-eighths of the area of Japan is mountain land, and of such a character as practically to preclude the permanent support of a rapidly-increasing population. Korea, however, with its hills and forests, its mineral wealth and fertile plains, has been as yet comparatively little exploited, and offers exactly the colonising ground needed for the overflow of the swelling tide of Japanese life.

A vote of thanks to the lecturer for his very interesting address and for the beautiful slides shown was moved by Councillor J. SNADDON, seconded by Mr. R. COBDEN PHILLIPS, and passed unanimously.

The 725th Meeting of the Society was held on Tuesday, April 3rd, 1906, at 7-30 p.m. In the chair, LIEUT.-COL. H. T. CROOK, J.P., F.R.G.S.

The Minutes of the Meeting held on March 30th, 1906, were approved.

MR. E. W. DANN, B.A., F.R.G.S., gave an address on "Orography and History," illustrated with a large number of Orographical Maps. (See page 56.)

A vote of thanks to Mr. Dann for his interesting address was moved by Mr. R. C. PHILLIPS, seconded by Councillor J. SNADDON, supported by Messrs. R. CROSTHWAITE, M.A., B.Sc., WM. TURNER, and ROBERT STEWART, and carried unanimously.

ANNUAL DINNER.

The Annual Dinner of the Society was held at the Queen's Hotel on Tuesday, June 12th, 1906, at 7 p.m., with the Rev. S. A. Steinthal, F.R.G.S., in the chair. The guest of the evening was the Right Hon. Lord Stanley, K.C.V.O., C.B., F.R.G.S., and there were also present: His Worship the Mayor of Salford (Alderman Frankenburg), Messrs. E. W. Mellor, J.P. F.R.G.S., J. E. Balmer, F.R.G.S., S. Oppenheim, J.P.,

D. A. Little, F. Zimmern, J. Howard Reed, George Thomas, T. W. Sowerbutts, Hermann Woolley, F.R.G.S., J. McFarlane, M.A., H. C. Martin, F.R.G.S., Jacob Earnshaw, W. A. Arnold, T. S. Deakin, G. G. Deakin, Frederick Heap, John Heys, Alderman John Griffiths, F. S. Oppenheim, John R. Smith, F. Mills, E. Parkes (Town Clerk of Eccles), and others.

After the usual loyal toasts had been honoured (the President, H.R.H. the Prince of Wales, being specially mentioned), the Chairman gave the toast of "Our Guests," which was briefly acknowledged by Lord Stanley.

Lord Stanley then proposed the toast of "The Manchester Geographical Society," and congratulated the Society on having attained its majority. Geography, he said, was one of the most useful of sciences, but was none the less one of the least studied and least understood. It had been said that the only time English people concerned themselves with geography at all was when there was a question of a war. To a certain extent he believed that was true. He was quite sure there were certain incidents in our national life which alone had brought to the minds of people of the country a knowledge of certain localities. He doubted whether until our little trouble with Turkey recently, many people in this country understood where the Turkish boundary ended and the Egyptian boundary began, and he was perfectly certain that until the war in South Africa people had very little idea of the geography of South Africa. Nor had many people, perhaps, a great knowledge of China until they heard of Chinese labour. It was a fact that though people had a vague idea of the geography of the world they had very little idea of distances. He had, as the chairman had said, done some little amount of travelling, but it was only as a sort of ordinary globe-trotter. But even travelling of that sort gave one a knowledge which he did not think could be got at home, the knowledge of distance, which was the most important part of the study of geography.

But geography did not stop at the knowledge simply of the surface of the globe. Directly they learned that a certain place was at a certain distance from their own neighbourhood they tried to ascertain what sort of country it was, what was the character of its inhabitants, and what was its history. The study of geography brought with it the further study of geology, and what, to his mind, was the still more interesting study of the history of the various localities. That was of great value in these days of extraordinary commercial competition and the fight for commercial superiority, when it was essential that those who were engaged in commercial pursuits should have a close acquaintance with the places to which they were sending their goods. Still more important was it that they should know the people who lived in those places. Their Society, therefore, in teaching geography in a commercial town, not only taught a subject of interest in itself, but they gave an additional aid to the commercial superiority of the town in which they lived.

The study of geography, even in one's own experience, brought home to them two things. In the first place they realised how much of the globe was indebted for its civilisation, its industry, and its cultivation to our forefathers. And when they recognised that, and recognised the distance which was the keystone to geography, they had recognised what enormous enterprise and what extraordinary courage were shown by those who had

gone before to found other empires in other parts of the world. Then, if they went outside that part of the globe which was "painted red" and proceeded to other and foreign localities, surely their view of the world and of life was broadened. They no longer looked on life simply as it was within these small islands of ours; they recognised that there were other peoples with other manners and other customs, and they sometimes found that these manners, customs, and methods showed an improvement on our own. In this way such a society as theirs imparted the knowledge whereby they learned the nature and circumstances of foreign countries, and even in places where the flag that waved was not their own they were able to keep the name of Great Britain paramount among the nations trading with those countries.

A NON-PARTISAN SOCIETY.

MR. J. HOWARD REED responded to the toast, and referred to the fact that until recently Lord Stanley had controlled "the largest staff of practical geographers to be found anywhere on the face of the earth." Mr. Reed described the society as non-partisan in every sense of the word, and spoke with gratification of the fact that under their geographical banner all political parties and all religious denominations can meet on common ground and unite for a definite object—the increase and diffusion of geographical knowledge. He pointed out that one of the first aims of the Society, as explained in the Rules, was "to promote the study of all branches of Geographical Science, especially in its relation to commerce and civilisation." With the limited means at its disposal, the Society had done much to further that object, but he felt that the organisation was not meeting with that support which it deserved from the commercial men of the district. The Society ought to have a far greater number of members than its present total of 600. If the city and surrounding districts would give them a membership of 2,000, the Society would be able to perform a work of which any great commercial city might well be proud. The new premises in which the Society was housed formed a splendid basis for larger work and increased usefulness, but until they had a considerable accession of members the work would be crippled through lack of funds. Mr. Reed reminded the members that the furnishing fund was still open, and that only a little more than half of the £600 asked for had as yet been forthcoming. The speaker pointed to the *Journal* of the Society as a sample of the work done, and drew attention to the useful educational work carried on in the districts surrounding Manchester by the "Victorians." He concluded by expressing himself as highly optimistic of the future of the Society, and made a strong appeal to all those present to do their part, in season and out of season, to lengthen the membership roll.

MR. E. W. MELLOR, J.P., F.R.G.S., submitted the toast of "Manchester and Salford," which was responded to by His Worship the Mayor of Salford.

The CHAIRMAN proposed the "New Members of the Council"; Messrs. J. McFarlane, M.A., and H. C. Martin, F.R.G.S., responded.

MR. F. S. OPPENHEIM, in graceful and felicitous terms, proposed the toast of the Chairman, and the response by Rev. S. A. Steinthal brought the proceedings to a close.

The 727th Meeting of the Society was held at Melandra on Saturday, June 23rd, 1906.

Mr. R. HAMNETT, Hon. Secretary of the Glossop and District Antiquarian and Natural History Society, met the members at Glossop Station, and showed them at his rooms a selection of the relics found on the site of the Roman Camp. He gave a very interesting account of the discoveries so far made and of the probable history of the camp. The party then proceeded by electric tram to near Melandra, and Mr. Hamnett led the way up the hill to the camp. A palisade has been erected by the Antiquarian Society to protect the site, and seems very necessary, as even with that some damage has been done. The leader carefully described each gateway and the other objects to be seen, concluding with the foundations of the central building.

Mr. J. J. GLEAVE moved, Mr. J. HOWARD HALL seconded, and it was carried unanimously that a hearty vote of thanks be tendered to Mr. Hamnett for his kindness in leading the party and explaining the various points of interest in so very clear a manner. Mr. Hamnett made a suitable response.

NEW BOOK.

"A PROGRESSIVE COURSE OF COMPARATIVE GEOGRAPHY ON THE CONCENTRIC SYSTEM." By P. H. L'Estrange, B.A. Illustrated by 177 Pictures and Diagrams in the text, and 172 Maps and Diagrams in colour. London: George Philip and Son Ltd. 1906. Price, 6s. net.

THE aim of "A Progressive Course of Comparative Geography," as set out in the preface, is admirable, and one must admit that to stimulate reason rather than train the memory, to give pupils the power to use facts and principles rather than store the memory with useless details, to educate rather than instruct, form a high ideal worthy of great praise, and one anxiously endeavours to find out how the book fulfils this most desirable object.

The maps generally are good; they have clear and well-marked outlines and bold and good type generally; they are free from lists of useless names and overcrowding, and many of them well illustrate the objects for which they have been introduced.

The value of symbols for mountains, towns, rivers, etc., in many of the maps is of doubtful advantage, and to many will prove puzzling, if not confusing, and the shading on a few would have been improved by a more distinct range of colours for heights of mountains and depths of oceans. In some cases there is no reference to the figures, etc., in the text.

The illustrations, pictures, diagrams, and tables are generally good, and should prove interesting and instructive. The questions are very numerous and well arranged, and cover a wide range of geographical knowledge; but many of the questions make a great demand on the geographical intelligence of the pupil, or require a great deal of map study with little in the book to help.

The book contains valuable information, and is full of suggestive matter, but to be of use as a course of geography it will need the skill and intelligence of a capable teacher, or the aid of a good and reliable text-book. One naturally asks: For what kind of pupil is the book intended? If for young children, the matter in the first part particularly is too advanced, scrappy, and vague; there is no linking of lessons, and most of them presuppose a great deal of geographical knowledge not contained in the book itself.

The maps, illustrations, and questions should prove of great value in revision work and for tests.

H. C. M.

THE JOURNAL

OF THE

MANCHESTER GEOGRAPHICAL SOCIETY.



AN UNDISCOVERED COUNTRY, AND THE ENGLISH HOLLAND.

By MARK W. THOMPSTONE.

[Addressed to the Society in the Geographical Hall, on Tuesday,
March 13th, 1906.]

SOME ten years ago I had the pleasure of giving you an account of a holiday tour in the extreme west of the British Isles, through a district little known to the general public, and to-night I intend taking you to the south-eastern portion of our island, to a county, which, even as late as the commencement of the 20th century, has been styled "An undiscovered country."

Some of you may wonder at my applying such a term to an English county in the present day, but I wonder how many there are amongst us northerners who could say they knew anything about Essex, beyond the fact that the River Stour dividing it from the rich lands of Suffolk, was, with its meadows and watermills made famous by Constable, and the Stort and Lea, separating it on the west from Hertfordshire, are the haunts of the compleat angler.

The general impression of Essex is, that it is a flat, desolate marsh, with no interests to tempt the holiday maker, instead of which it can in its own way compare favourably with its better known rivals; its charms are Nature's own, pure and simple, unsurpassed in their home-like sweetness, but how long will they remain untouched by the hand of man? The speculative land grabber, and the jerry builder, the curses of our land, who, under the guise of progress and the demands of civilisation, seek to fill their own pockets at the expense of our country's beauty, are even now knocking at her door, and time alone will show how far their vandalism and greed will be allowed to spoil those natural beauties; but there are a few who foresee the danger, who, blessed both with position and influence, are doing their best to save some of our country's natural beauties from the hands of the spoiler, so that in the years to come Britain may still be numbered amongst the beauty spots of the world.

A glance at the map of Essex shows us a country broken and indented by numerous creeks and estuaries, tidal waters, and marshes

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of the Colne, Blackwater and Crouch. This marsh country, as it is sometimes called, often considered as flat, stale, and uninteresting, is, on the contrary, full of interest and enduring charm, and I wish to put in a plea this evening for a more thorough exploration of these highways, byways, and waterways of our own country, "the land we love—or should love—the most." Then, perhaps, we shall realise there is an endless field in the study of our own antiquities and folklore, and, that they are worthy to rank equally with the customs and superstitions of foreign nations.

Leaving Liverpool Street Station, we pass as rapidly as the network of lines will allow through Forest Gate, at one time part of Epping Forest, which extended over the greater part of the county, on to Brentwood, a town whose history dates back to the days of Edward the Confessor, situated in the centre of the Weald country, and on the old Roman, now modern, road to East Anglia. Here, at the sign of the White Hart, which claims to have existed since 1480, you may hear in the evenings tales of those good old coaching days before the iron horse arrived, and a very enjoyable time may be spent in exploring the beautiful scenery surrounding the quaint old town.

Pass Ingatestone, the centre of the 100 square miles of Essex devastated by an awful hailstorm on that black day in the mid-summer of 1897, whose hall is the original of Audley Court in Miss Braddon's famous novel "*Lady Audley's Secret*," Chelmsford, a busy market town, whose history dates back to the old days of the Saxon period, and the little junction of Whitham is reached, where we change carriages, and shortly arrive at the small but populous and picturesquely situated town of Maldon. (See Fig. 1.)

Maldon is divided into two parts by the River Blackwater. East Maldon, situated to the north of the river, is lower than West Maldon, which stands on the south bank on a steep eminence. If approached by water it presents a striking aspect with its quays and shipping standing out against a background of old-fashioned red-tiled houses, interspersed here and there by tower or spire. Delightful views may be had of the surrounding country, across the estuary and towards the sea. The town itself is also full of interest with its quaint corners and narrow alleys, which remind you of Whitby. One of its attractive features is the Moot Hall, dating back to the Tudor period, with an over-hanging clock, and a portico over the footway, supported by four stone pillars; its grey and worn exterior gives no clue to its age, and it is only when you enter and view the fine old pannelled council chamber, the Newel staircase, with a hand-rail of moulded brick, that you realise you have here an example of the early fifteenth century. From the leaden roof extensive views may be enjoyed of the surrounding scenery.

All Saints', the Parish Church of Maldon, has many fine examples of Early English, decorated, and perpendicular work, but its chief feature is the singular triangular tower. St. Mary's, founded during the Norman era, is principally of the fifteenth century. In an old building, until lately used as a schoolhouse, close to the old tower of St. Peter's Church, is housed the famous library of some 7,000 volumes, collected and presented to the town by Dr. Thomas Plume.



FIG. 1.—MALDON FROM THE RIVER

[M. W. T.]



FIG. 2.—AN ESSEX SALTING.

[M. W. T.]

Archdeacon of Rochester, born at Maldon in 1630; he was also the founder of the Plumian Professorship of Astronomy at Cambridge University. He died in 1704, and lies in Longfield Church, Kent.

Beyond its weekly market the trade of Maldon is small, and its shipping is confined chiefly to hay and straw for the London market; but Maldon has its romance, for it was stated by the old historians to be Camulodunum, the chief seat of Cymbeline, but later authorities have shown this to be false, as the honour of being the town referred to by the Roman authorities belongs to Colchester. But the Romans did visit Maldon; of this there is undoubted proof, for coins and pottery show traces of their occupation of the town.

But it is to the days of Alfred we must look for the first records of its history, and there we find that one of the most famous battles between the Saxon and Dane took place, when, in 991, the Danes beset the town in great force, but, although hard pressed, it managed to hold out until help came, and the besiegers were driven off. But in a short time they returned again in greater force; then took place that fight which caused the men of Maldon, though worsted in the struggle, to be handed down to future ages as heroes in that priceless relic of Anglo-Saxon literature, "The Song of the Fight at Maldon." Freeman, the historian, compares it to the old battle songs of Greece, and complains of its not being placed on a par with them because it is written in the English tongue. He says: "The song is plainly local and contemporary; it comes straight from the soul of the East Saxon gleeman of the tenth century. It is something to stand on the spot and to call up the picture of the valiant Ealdorman, lighting from his horse among his faithful hearth-band, marshalling his men in the thick array of the shield-wall, refusing to pay tribute to the Vikings, and telling them that point and edge shall judge between them."

We are told in the poem how the Panta, or Blackwater, separated the combatants, how they had to wait for low tide before they could come to close quarters—

"Between them flowed the tide;
For after ebb the flood rolled up, it filled the channel wide.
And till their spears together clashed, too long the time did seem
To Viking and East Saxon ranks arrayed by Panta's stream;
For neither could the other hurt save by the arrows' flight
Till ebb of tide."

We are then told how the story of Horatius and his two companions, defending the bridge over the Tiber, is repeated by Wulfstan, Alfhere, and Maccuo, who so long as they had strength to wield their weapons defended the passage of the bridge across the Panta. While most, if not all, of us know the old Roman tale, how many have heard of its English counterpart?

The song then describes how the Vikings crossed at a ford higher up, narrates the incidents of the fight, the single combats, and at length relates the death of the noble Earldorman Brihtnoth, and how, when he had received his death wound.

"He to heaven looked,"

and said—

“ ‘Thank Thee, Nations’ Wielder,
For all the good things
That I in th’ world have had;
Now I own, mild Maker,
That I most have need,
That Thou to my ghost
Good should grant,
That my soul to Thee
Now may make its way,
To Thy Kingdom,
Lord of Angels,
With peace to journey.’ ”

We are told of a cowardly follower who, on his lord’s death, seized his horse and fled; but there were others there of sterner stuff who stayed to avenge their master. These fell one by one, and as they met their fate

“ Mind shall the harder be,
Heart shall the keener be,
Mood shall the more be,
As our might lessens.”

Sad to relate, the Danes misused his body, carried away the head to Denmark, where the skull would probably figure as a drinking cup, and the remains were interred in the Abbey of Ely.

Leaving West Maldon, crossing the river, passing through East Maldon, and following a path through an avenue of trees which reminds you of the old Dutch landscapes of Hobbema, we reach the populous suburb of Heybridge. Here is a sea-water basin where vessels discharge their cargoes into lighters, and these are taken up the Chelmer Canal to the county town of Chelmersford. Messrs. Edward Hammond, Bentall, and Co. have large engineering and agricultural works, and there is an extensive importation of high-class timber carried on by Messrs. John Sadd and Sons Ltd.

There are any number of interesting rambles round Maldon, but one that the visitor must be sure to take is to Beeleigh Abbey, the relic of a religious house at once so picturesque, and of so much antiquarian interest, that few places in the county can equal it.

Leaving the town by the western outskirts, we pass Spital Farm, which takes its name from the ancient Leper Hospital of St. Giles, whose site it now occupies. The only genuine relic is a large building built in a cruciform shape, now used as a barn. Built into the walls of stone are Roman bricks and windows, whose architecture indicates their thirteenth century origin, but very little is known as to its foundation.

A short walk through the fields, along the side of the Chelmer, which, just below the Abbey, forms a foaming waterfall, crossed by a flat wooden bridge, brings us to Beeleigh. The Abbey of to-day is little altered so far as outward appearances go to what it was at the time of the Dissolution, for, unlike the majority, it was allowed to stand instead of being pulled down and a modern building built in its place. The result is a delightful jumble of different styles of architecture, early English windows and doors, Elizabethan brickwork, timbered gables, and chimneys in clusters, inside groined roofs and Tudor fireplaces.

Close to the Abbey was the old mill and the fishponds of the monks. A little to one side, near the floodgates, is a pretty thicket, crossed by trickling streamlets, where is situated the Lion Elm, so called from the curious formation of one side of the trunk, which resembles a lion's head. Beeleigh is the angler's paradise, for all manner of fishing can be had in the waters of the Chelmer and Blackwater, and in the Chelmer Navigation Canal, which joins the two rivers above Beeleigh. The river and the river banks abound with flowers too numerous for an inexperienced botanist like myself to christen.

Among the interesting places round Maldon are Great Totham, with its ancient barrows where Dane and Saxon lie side by side, and Tipton Heath, the scene of Boadicea's fight with the legion of Suetonius. (See Fig. 2.)

At the mouth of the Blackwater, where it opens out into the estuary, lies the little island of Osea, which is being developed by Mr. Charrington as a temperance health resort. Further north, at the mouth of the estuary, lies the island of Mersea; on its eastern side, facing Brightlingsea, is the little village of East Mersea, where the Rev. S. Baring Gould was once rector. His powerful tale "Mehalah" has done for Essex what Blackmore's "Lorna Doone" did for North Devon, for it is full of the wild spirit of Mersea life and scenery. Mehalah, though the creation of an author's brain, is held by many of the island inhabitants to be a true history, and they will point out people whose ancestors figure in the story. Here are a couple of anecdotes related by Mr. Baring Gould in his interesting book, "On Old English Homes." He once asked an old Essex yeoman, "What! nine or ten miles from a doctor? The answer came, "Well, sir, yes it is ten. Thank heaven we all in this parish mostly die natural deaths." The other tells of an Essex farmer's wife who at times was troubled with her lungs, when she used to swallow some shot from her husband's flask. "You see, sir," she explained, "my lungs ain't properly attached, and in windy weather they blows about. You know how you've got the curtain at the church door weighted with shot? That's to keep it down. Well, I takes them shot on the same principle—to keep my lungs down."

Round here, at the mouth of the Colne, lie the famous oyster beds, and many fishermen are dependent on this industry; but oyster dredgering is hard work.

Time will not permit of my describing more of the wonders of this part of Essex, but entering the train we join the main line at Colchester. This old town, whose history goes back 2,000 years, when, as the Roman town of Camulodunum, it became their chief settlement in Britain, is now noted as the busiest agricultural centre of Essex, and one of the principal garrison stations of England. The origin of its name is unknown, but is supposed to mean the "town of Camulos," a Gaulish deity probably worshipped both by Britons and Romans; it was also the capital of Cunobelin, celebrated by Shakespeare in his play of "Cymbeline."

On the invasion of Britain the Emperor Claudius was opposed by Cymbeline's two sons, but defeated them.

The chief feature of the town is the almost perfect condition of its ancient walls, for while the old buildings and narrow streets have given way before the requirements of commercial progress, only a few old

houses here and there, with a few carefully-preserved inns, remain to remind us of its ancient origin.

Most of us in our nursery days used to sing the rhyme about "Old King Cole was a merry old soul," but few of us, even when grown up, know that it is based on a legendary British king, who is said to have built the first wall round Colchester. In a village just outside the town is shown his kitchen, which was probably the site of a Roman theatre. We are told that he had a very beautiful daughter, Helena, who married the Roman general, Constantius, as King Cole had no son to succeed him. They had one son, who became Constantine the Great. Here, also, Boadicea, one of the most heroic and pathetic of England's historical characters, fought her famous fight.

During the Middle Ages very little is heard of the town, until the famous siege by the Parliamentarians, under Sir Thomas Fairfax, which lasted seventy-six days; but this victory was disgraced by the execution of Sir Charles Lucas and Sir George Lisle the day after the capitulation.

One of the most interesting of the old Roman relics is the Balkan gate, situated on the top of the Balkan Hill, and with one exception is said to be the only Roman gateway left in England. Referring to this relic of bygone days, Carlyle says: "How beautiful to see thereby, as through a long vista into the remote time; to have as it were an actual section of almost the earliest past brought safe into the present, and set before our eyes." Other interesting objects are the Castle and St. Botolph's Priory, both of Norman origin. Besides its agricultural interests there are several large engineering firms associated with the town. The country around provides many interesting excursions.

Passing onwards we come to Ipswich, an ancient market town, and capital of the county of Suffolk. Situated on the north bank of the River Orwell, about twelve miles from the sea, Ipswich is a town of considerable size, and a rising port; its water area at the present time extends over 32 acres, vessels of 2,000 tons being able to enter its harbour. The Town Hall, with its imposing frontage and statues representing Commerce, Justice, Learning, and Agriculture; the General Post Office, the Museum, the Schools of Art and Science, the Victoria Free Library, and the Art Gallery, are all modern buildings. Ipswich dates its history to the times of Ethelred, and is mentioned in the Domesday Book as "Gyppesari." It is stated to have contained nine churches; it was incorporated in the reign of King John, and in 1447 sent two members to the National Parliament. One of the most interesting of its old associations is its connection with Cardinal Wolsey, who was born here in 1471, and the house in which this took place is still pointed out. Another interesting relic, if not the chief, of the old Tudor buildings, is the "Ancient House," better known as Sparrowe's House, the name of a family who once owned it; it is an unique specimen of the domestic architecture of 1567, and if placed in one of the old German towns would be held up as an object of admiration, but being in an English town it is little known, for it is not labelled with that magic passport to notoriety of "Made in Germany." Under each of the five bay windows of the first floor is a panel with a plaster-modelled figure in alto-relief, representing (1) Atlas bearing the globe; (2) America, an Indian figure with bow and arrow; (3) Africa,

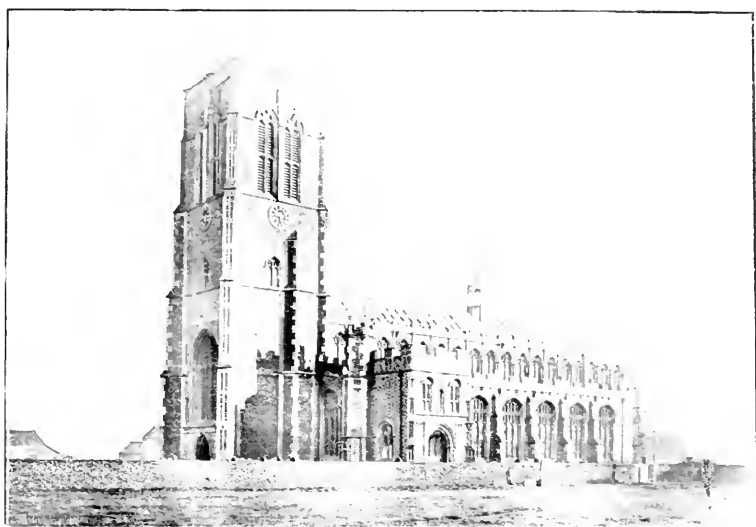


FIG. 3.—ST. EDMUND'S, SOUTHWOLD.

[M. W. T.]

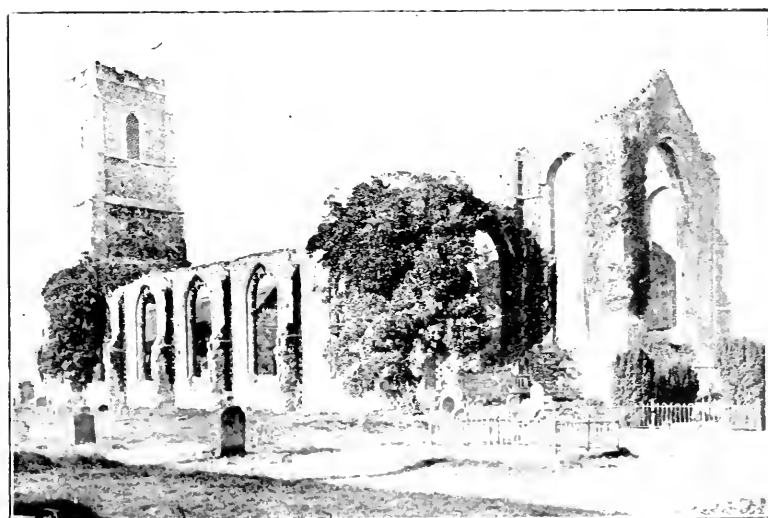


FIG. 4.—COVEHITHE CHURCH.

[M. W. T.]

a figure seated on a crocodile; (4) Asia, a figure with a camel's head by her side; and (5) Europe, a figure holding a sceptre and cornucopia. It is said to have been a hiding-place of Charles II. during the Civil War. Another famous building is the old hostel known as the White Horse, the scene of the romantic adventures of Mr. Pickwick with a middle-aged lady in yellow curl papers; but while the inside remains almost as it was in those good old coaching days, the exterior has been modernised with a front of white brick. Most of the churches are modern, but contain many interesting objects taken from their original namesakes. There are other quaint timber-built dwellings of interest, and pleasant excursions can be made in the surrounding country. Up the river, which above Ipswich is known as the Gipping, some lovely pastoral scenery is met with.

Ipswich is also an important centre of manufacturing and commercial activity, containing many important firms whose productions are known all over the world. But we hasten on, and, re-entering the train, are whirled northwards. Pass Woodbridge, an old-fashioned market town; Saxmundham, the junction for the Aldeburgh branch line, and Halesworth is reached. Here we change into the narrow-gauge Southwold Railway, and soon reach, according to the Guide Book, "the ancient seaport and marine health resort of Southwold. This little seaside resort has been styled Holland at home, not that there is anything Dutch about the place or people, but it has many claims to be considered one of the most interesting places on the East Coast, for it is the centre of a district full of historical associations and picturesque relics of former times. Besides having a healthy and invigorating climate, it claims to be considered an artist's land in contrast to the Poppyland of Cromer.

Situated close to the mouth of the River Blyth, Southwold dates its history back to the year 1490, when, as a result of a dispute with the neighbouring town of Dunwich, it obtained a charter from Henry VII., but before the charter, viz., in 1202, a chapel was built here by the Monks of Thelford. This building was destroyed about 1430, and shortly afterwards the present church was commenced. About 1758 some men, in digging, came across the old foundations, and, on measurement, these showed the old structure to have been 72 feet long. The present edifice is 144 feet long and 56 feet broad; the exterior is beautifully faced with flints. (See Fig. 3.) The tower rises to a height of 100 feet, but the battlements round the top never appear to have been completed. Over the west window is inscribed the following in Old English characters: "St. Edmund, Ora pro Nobis." Above the porch is a chamber, formerly used as an arsenal. Just outside the chancel entrance are three headstones, which mark the graves of Thomas Gardner, the historian of Dunwich, and his two wives. They bear the following curious inscriptions:—

The one on the south side bears this inscription:

"To the memory of Rachel, the wife of Thomas Gardner, who died 9th March, 1729, aged 35 years; and Rachel, their daughter, who died 18th April, 1729, aged 12 years.

"'Virtue crowned, during life,

Both the daughter and the wife.'"

The stone on the north side bears :

" Mary, wife of Thomas Gardner, died 3rd May, 1759, aged 67 years.
 " Honour ever did attend
 Her just dealings to the end."

The centre stone has inscribed upon it :

" In memory of Thomas Gardner, salt officer, who died March 30th, 1769, aged 79 years.

" Betwixt Honour and Virtue here doth lie
 The remains of old antiquity."

Here may also be seen the tombs of "Agnes Strickland," historian of the Queens of England, and her sister, "Jane Strickland." The interior, built in the perpendicular style, is very beautiful, but nothing to what it must have been before the time of the Civil War, when so many beautiful churches suffered destruction at the hands of the Parliamentarians. In the rood upper doorway in the north aisle is a quaint wooden figure in armour, known by the name of "Jack Smite the clock." It is an ancient relic, and used before every service to give notice to the congregation that the clergy are about to enter. At the entrance to the churchyard stand the old stocks. There is also a good Golf Club with an 18-hole course. The chief portions of the town occupy slightly-elevated ground overlooking Sole Bay, a grand sweep of water, the scene of two well-contested sea fights between the English and Dutch fleets in 1665 and 1672.

To the north of the town, on the way to Lowestoft, is the small fishing village of Covehithe, famous as the birthplace of that sturdiest of reformers, and most mordant of controversialists, Bishop Hale (1495). Here also is a fine old church, whose ivy-clad ruins bear silent witness to the former wealth and populousness of a place which now ranks amongst the poorest and meanest parishes in the county. (See Fig. 4.) All the ancient parts of this once-stately pile are crumbling into decay, but Divine Service is still carried on in a small building, built within the nave of the older church about 1672. The great arch of the east window still attests its former beauty, and the tower acts as a good landmark for travellers.

" All roofless now the stately pile,
 And rent the arches tall,
 Thro' which, with bright departing smile,
 The western sunbeams fall.

Tradition's voice forgets to tell
 Whose ashes sleep below,
 And fancy here unchecked may dwell
 And bid the story flow.

—A. Strickland.

Five miles to the west of Southwold lies the little village of Blythburgh, situated on the River Blyth, noted for the ruins of the old Priory of the Augustines, and its beautiful church of the Holy Trinity. A market town in the reign of Edward the Confessor, it had to render 10,000 herrings yearly for the King's use. The church contains what



FIG. 5.—WALBERSWICK.

[M. W. T.]

is said to be the tomb of Anna, King of the East Angles, who, with his son Ferninus, was slain in a battle with the Mercians on Bulcamp Heath in 654. The roof is elaborately carved and decorated, and bears thirty coats-of-arms. "Few ecclesiastical structures in this kingdom possess a juster claim to unqualified admiration . . . whether we contemplate the unity of the design, the extent of its dimensions, or the exact symmetry of its component parts, judgment and taste will alike be satisfied." It is almost entirely perpendicular, and consists of tower, chancel, clerestoried nave, and aisles. Like many other churches, it suffered considerable damage during the Civil War, and its condition at the present time is even now pitiful, for it sadly wants repairing; but the parish is a poor one, and without outside help it would be impossible to do this.

The decay of Blythburgh is said to be due to three causes—water, confiscation, and fire. Water, for the sea has so stilted up the old harbour of Dunwich that vessels are unable to come up to Walberswick; confiscation, when the Augustinian Order was suppressed; and by fire in 1676, when so great was the devastation that the town never recovered.

Nearer the sea, on the road between Southwold and Dunwich, lies the little village of Walberswick. If Cromer is entitled to be called Poppyland, then Walberswick may fairly claim to be considered Artist's land, for this little village, with its quaint old houses, bridges, and ferry, its fine old ruined church is considered the most picturesque village on the Suffolk coast. It is the resort of countless numbers of artists, who love to depict its beauties with brush and pencil. (See Fig. 5.) Its resemblance to Holland is so great that it has been called "the English Holland." "Spacious green distances under bright, silvery Van der Velde-like skies, cattle feeding that Paul Potter might have sketched, dykes and waterways and high wooden little bridges, red roofs shining in the sun, backed by trees and topped by grey church towers, and over all there is sunshine and the flavour of the sea." The likeness is so great that the country might have been laid out and composed by Dutch painters.

The church was built by the inhabitants in the palmy days between 1473 and 1493. It consisted of a chancel, nave, aisles, porches, and a fine lofty tower. Like its companion church of Blythburgh, it suffered in the fire that devastated the town in 1633, and Dowsing, with his wreckers, furthered its decay. Three subsequent conflagrations and the depression in the fishing industry reduced Walberswick to poverty, and in 1695 the inhabitants asked to be allowed to take down the roof and north aisle, sell some of the bells, and with the proceeds render a portion of the south aisle fit for service. Their petition was granted, and the present small church was built, the old tower was restored, and is standing at the present day.

Leaving Walberswick, and following the coast line, we might easily fancy ourselves in Holland, with its dykes to protect the lands against the inroads of the sea, its quaint windmills, and the watery pastures all reminding us of that country. A short walk brings us to all that remains of the once powerful city of Dunwich—a few scattered cottages along a sea-washed cliff, and the crumbling ruins of a church. The discovery of Roman remains and coins goes to prove that they had a

settlement here, and a road connecting Dunwich with Bury St. Edmunds is known to have existed, being mentioned in ancient documents under the title of the "King's highway." It was also a port of some importance during the Saxon era, and Felix, the Burgundian monk, chose it for the establishment of the See of East Anglia in 632. As early as the days of Edward the Confessor the town's battle with the waves began. In 1628 it was stated, in a petition forwarded to the then Duke of Buckingham, that the town formerly consisted of fifty-two parishes, all of which save one had been submerged.

Time will not permit of my giving you a full account of the town's interesting history, its unsuccessful siege by the Earl of Leinster in 1173, its support of King John in the Barons' Wars, and its final ruin completed by the Suppression of the Monasteries. As a borough it returned two members to Parliament until 1832, when it was disfranchised, and its municipality was taken away as lately as 1886.

In the winter of 1328 Dunwich received its first great blow from its watery enemy, when its harbour and 400 houses were destroyed by the waves. In the 16th century, we are told in a curious document dedicated to Master Deye, and supposed to have been written by Stowe, that the parishes and churches of St. Leonard, St. John, St. Martin, and St. Nicholas had met with the same fate, and shortly afterwards two of the town's gates were broken down.

Other ecclesiastical buildings are said to have suffered a like fate, and in 1702 St. Peter's had to be pulled down, its fall being imminent. In the great storm of 1740 "the sea raged with such fury that Cock and Hen Hills, which the preceding summer were upwards of 40 ft. high, had their heads levelled with their bases, and the ground about them so rent and torn that the foundation of St. Francis' Chapel, which lay between the said hills, was discovered."

The present ruins of All Saints' will probably shortly suffer the same fate. Very aptly do the following lines, written by a Suffolk poet, describe this once famous city:—

"Where the lone cliff uprears its rugged head,
Where frowns the ruin o'er the silent dead,
Where sweeps the billow on the lonely shore,
Where once the mighty lived, but live no more,
Where proudly frowned the convent's massy wall,
Where rose the Gothic tower, the stately hall,
Where bards proclaimed, and warriors shared the feast,
Where ruled the baron and where knelt the priest,
There stood the city in its pride—'tis gone—
Mocked at by crumbling pile, and mouldering stone."

Here I must bring my rambles to a close, but before doing so there are a few remarks I feel I must make. In the first place, if there should be any East Anglians in my audience this evening I trust they will pardon me for not having done justice to their country. When I mentioned to an East Anglian the places I intended to speak about he said I had not chosen the best, and I quite agree with him; but I have given you my own wanderings, and I hold that if these places, even though they are not the most picturesque, can claim attractions such as I have endeavoured to place before you this evening, then the reproach that has so long been levelled at Essex that it is dull, flat,

and uninteresting, must be consigned to the past, and justice done to the rustic beauties due to natural sources alone of both Essex and its sister county of Suffolk. For in spite of the rush of the majority of tourists and holiday seekers to the advertised and fashionable resorts, both at home and abroad, it is when we find ourselves planted amid these homely scenes whose charms are Nature's own, where even the villages and mansions show in their domestic architecture a quaint simplicity unspoiled by the changing tastes of the rushing crowd, there is something to be said for the simple life led by their inhabitants, and its contrast to the rush and struggle of the town. These influences cause us to reflect, and as our gaze travels over the fertile pastures or sea-girt marshes, reflecting back the glories of the heavens in masses of light and shade, we feel there must be more than we are wont to realise in that unseen universe which surrounds us, and those words of the Psalmist rise to our lips:—

“O Lord, how wondrous are Thy works: in wisdom hast Thou made them all: the earth is full of Thy riches.”

NOTES.—A marsh is a reclaimed salting, enclosed within a sea-wall. A salting is land occasionally flooded, otherwise serving as pasturage. (See Fig. 2.)

Recently extensive works have been begun to render the River Blyth navigable past Walberswick, and the old picturesque aspect of the mouth of the Blyth has gone for ever.

NEW ATLAS.

ATLAS OF THE WORLD'S COMMERCE. A new series of Maps, with Descriptive Text and Diagrams showing Products, Imports, Exports, Commercial Conditions, and Economic Statistics of the Countries of the World. Compiled from the latest Official Returns at the Edinburgh Geographical Institute, and edited by J. G. Bartholomew, F.R.S.E., F.R.G.S., etc. London: G. Newnes Ltd. 1906.

WE have much pleasure in drawing the attention of the members to this new atlas, of which the first sixteen parts have been received. When complete, it will form a very useful work of reference for information relating to the trade of the world. The “Dictionary of Commodities of Commerce,” issued with the earlier parts, and the “Introduction to Economic Geography,” by Mr. G. C. Chisholm, issued with later ones, should be of great value, especially to teachers.

IN AND AROUND HONG KONG.

By DR. ROBERT GIBSON.

[Addressed to the Society in the Geographical Hall, on Tuesday, March 20th, 1906.]

THE island of Hong Kong is situated off the coast of the Kwang-tung province of Southern China, near the mouth of the Chu-kiang or Canton River. It lies between 22 deg. 9 min. and 22 deg. 17 min. N. Lat. and 114 deg. 5 min. and 114 deg. 18 min. E. Long. Forty miles distant from it, in a western direction, is the Portuguese settlement of Macao, the oldest European colony in the Far East; Canton, the capital of Southern China, is 90 miles distant; and Shanghai, the trade rival of Hong Kong, is situated about 60 hours' journey to the north.

HISTORY.

The British ensign was hoisted on Possession Point by Captain Elliot in the year 1840, before which time little or nothing is known about the island. The incidents leading up to its acquisition by Britain form an interesting and instructive story of Chinese diplomacy and duplicity, into which, however, it is not my duty to enter.

By the Conventions of 1840 and 1898 further territory was ceded by China, consisting of upwards of 200 square miles on the opposite mainland, known as the New Territory, together with a few islands in the neighbourhood, chief of which is Lantau.

During its early occupation the island was found to be exceedingly unhealthy. Indeed, in 1844 the advisability of abandoning the colony was seriously discussed, the reason being the high death-rate among the troops. Hong Kong was at this time, and for many years following, known as the "Black Hole of the Far East," and it certainly did deserve its bad name; but, fortunately, chiefly through recent advances in tropical medicine, and especially to those initiated by Sir Patrick Manson, who was for many years resident in the colony, the island is now fairly salubrious.

DESCRIPTION.

The island is about 11 miles long and 2 to 5 miles wide, and has a sea border of about 27 miles. It consists of a broken ridge of hills, with few valleys of any extent, chief of which is Wong-nai-chung, or Happy Valley.

The capital of the island is Victoria, which is beautifully but unfortunately situated on the northern side of the island. From the harbour the city presents a very striking appearance, as the houses, many of which are large and handsome, rise tier upon tier from the water's edge to a height of 450 feet on the face of the peak, and many

houses may be seen on the top of the ridge of hills. Seen from the harbour at night, when thousands of lamps twinkle among trees and houses, the city, spreading along the shore for upwards of four miles, affords a beautiful sight, and gives one the idea of some "fairy-town."

The streets of the city are very narrow, but the roads are well kept. On the lower levels the roads are macadamised, but on the sides of the hills they are covered with concrete, this being necessary as a protection against the very heavy rains, especially typhoon rains. The traffic on the roads is all carried on by coolies, horses being quite unknown, the jinricksha and chair supplying the place of the cab. Electric cars have been introduced into the colony within the last two years, and there is a tramway on the wire-rope system running from near St. John's Cathedral below to Victoria Gap at the Peak.

The European business part of the town extends from Pottinger Street on the west to Murray Street on the east, and, except for this part, almost all the lower levels are covered with a dense mass of Chinese houses.

The Botanic Gardens are beautifully situated above Government House, and are well laid out in terraces, slopes, etc. There is a fine bronze statue of Sir Arthur Kennedy, a former Governor of the colony, in the Gardens.

The chief public building is the City Hall, which contains a small theatre and numerous large rooms which are used for public meetings. In one of the rooms, viz., St. George's Hall, there is a beautiful portrait of the late Queen Victoria, presented by Sir Thomas Jackson. There is also an excellent library in connection with the City Hall.

Government House occupies a commanding situation, in picturesque grounds well laid out, in the centre of the city.

There are quite a number of hospitals in the colony, but the chief are the Government Civil Hospital for Europeans and the Tung-wa for Chinese.

The barracks for the garrison are extensive, and constructed with great regard to the health and comfort of the troops.

Other buildings of note in the colony are the Central Market, the Head office of the Hong Kong and Shanghai Banking Co., and the Queen's Buildings—a set of offices on the Praya Central. Near the Queen's Buildings is a bronze statue of Queen Victoria, which was erected to commemorate the Jubilee year. The chief religious buildings are St. John's Cathedral and Union Church.

INSTITUTIONS.

There are several clubs in the colony, the chief being the "Hong Kong Club" and the "Club Germania." The Hong Kong Club is a beautiful building, well situated on the Praya Central. It is said to be the largest club east of Suez, and it has sleeping accommodation for about 70 members, and also a magnificent library. The Club Germania is a new building on the Kennedy Road. There are many other smaller clubs, and all kinds of sport are represented in the colony.

There are four daily papers published in English, and two weekly, and the native press is represented by six daily papers.

INDUSTRIES.

Manufactures are yearly increasing in importance. There are three large sugar refineries in the colony, and there are also factories for ice, rope, soap, glass, and matches. There are also large steam saw mills, and there is a cement company, which has part of its works at Deep Water Bay and part at Hung-hum. The Hong Kong Cotton Spinning, Weaving, and Dyeing Company has a mill with 55,000 spindles. The city is partly illuminated by gas and partly by electric light, the latter having been introduced in 1890. But the industry in which the colony may be said to excel is engineering and shipbuilding; nor is this to be wondered at when one remembers that the very existence of the colony depends on its harbour and shipping. There are several large shipbuilding and engineering works, but the largest and most prosperous is the Hong Kong and Whampoa Dock Company. This company has three establishments, viz., at Hung-hum, at Tai Kok Tsui, and at Aberdeen. The largest establishment is at Hung-hum, and their largest dock is 576 feet long and 86 feet broad. Here the largest ships sailing into port can be dry-docked, and here also ships of His Majesty's China Fleet can be re-fitted, thus obviating the enormous expense and inconvenience of bringing such ships to this country; and it speaks well for the work done by the company when one learns that the Admiralty are well satisfied with it. The company has also an established reputation for the construction of river steamers and small launches. The Admiralty are now building a dock for their own ships on the Victoria side of the harbour, which will probably be completed within the next two years. Messrs. Butterfield and Swire are also building an enormous dock (over 700 feet long) at Quarry Bay, which, when completed, will be one of the largest docks in the world.

TRADE.

Hong Kong is a free port, and there is no complete official return of the imports and exports compiled, but the value of its trade is estimated at about £50,000,000 per annum. In 1902 a total of 20,218 vessels of 8,734,308 tons entered and 20,094 vessels of 8,595,817 tons cleared with cargoes. There also entered in ballast 5,819 vessels of 1,133,178 tons and cleared 6,215 vessels of 1,246 148 tons. The trade chiefly consists in opium, cotton, sugar, salt, flour, oil, cotton and woollen goods, cotton yarn, matches, metals, earthenware, amber, ivory, sandalwood, betel, vegetables, granite, etc. Here it is that the large liners of European countries discharge their cargoes into enormous warehouses, whence it is distributed by small steamers and junks to the coast ports; these, in turn, returning laden with the produce of the country, which is transhipped to the large liners for distribution on the markets of Europe and America. There is an enormous Chinese passenger traffic, now restricted to the Straits Settlements, Netherlands India, Borneo, the Philippines, Siam, and Indo-China.

Hong Kong possesses unrivalled steam communication. The P. and O. S. N. Company and M. M. Company convey the European mail weekly, and the H. A. Company and N. D. L. Company maintain

a bi-weekly service between Bremen and China. There is also regular mail service with San Francisco carried out by American and Japanese companies, and the C. P. R. keep up a regular service with Vancouver. There is also regular communication with Australia kept up by the Eastern and Australian Steamship Company and the China Navigation Company. There are many large merchant liners running between Great Britain and Hong Kong, of which the Ocean Steamship Company, China Mutual Steamship Company, and the Glen, Warrack, Mogul, Ben, Union, and Shell Lines are the most conspicuous.

THE WEST RIVER.

Leaving Hong Kong for Canton, every day except Sunday, there are seven or eight large steamers, the best of which belong to the Hong Kong, Canton, and Macao Steamboat Company. To visit Canton probably one had better leave Hong Kong on the night boat, sleep on board, and arrive in Canton in the morning; but it is advisable to make one journey, either that going or returning, in the daytime, as there are many places of interest to be seen on the river.

Passing through the Kap-sui-moon (Seething Water Gate) Pass one sees Tai Mow Shan, which rises to a height of 3,000 feet, in the distance. On the left is the island of Lantau, and then Deep Water Bay is reached, which is the ulterior limit of British authority. Deep Water Bay is really a misnomer, as it is very shallow, and there are large oyster beds in the bay. The cultivation of oysters is an ancient custom among the Chinese. They do not use them in the fresh state, but dry them, and in this dry, black state they form anything but an inviting-looking dish to the European palate. At the Bogue one enters the river proper, and it was off Chuenpee that the first encounter took place between Britain and China in 1839, which resulted disastrously for the Chinese Fleet. As one proceeds up the channel numerous forts are seen on either side, which look very formidable, but are probably quite innocent and useless. The banks of the river are low, and rice grows luxuriantly in the irrigation fields. Here also there are extensive fruit gardens, and large quantities of lychees, whampees, loognans, pumelos, mangoes, guavas, oranges, and bananas are grown in them.

Piracy is a chronic institution on the river, and on board the ships one would travel up the river on, there is always an armed guard; and it is a fact, or at least is reported as such, that not a few Chinese launches leaving Canton carry a pirate on the pay roll to secure immunity against his professional brethren.

The great silk district lies away to the west, and there are many large towns here, which are said to have a population of 100,000 each.

The second bar pagoda, or Lily Flower Pagoda, is seen in the distance, and its function is understood to be the retention of good fortune to the surrounding country, which would otherwise be carried away by the river. Passing up along what is called the front reach of the river one passes the temple of Pawlaw on the right, which contains the idol of Hung Shing, the god of the Southern Ocean.

His services are frequently besought, as he is supposed to regulate the rainfall, and when showers are badly needed and the stoppage of the slaughter of sheep and pigs has failed to start the rains, the Viceroy comes down from Canton to implore the god's assistance. He is also a doctor of considerable repute, and the carrying of his image through the streets in times of sickness, with the accompaniment of music, viz., banging gongs, is a measure of great potency.

Before arriving at Whampoa we pass through a barrier formed by junks, loaded with stone and sunk side by side across the river, with piles driven alongside them to keep them in place. This form of defence was a favourite one with the Chinese, and the Viceroy who constructed this one remarked that man might and probably would run away, but he could reckon on the stones staying where he had put them.

When the steamer arrives opposite Whampoa she stops to disembark some Chinese passengers. Whampoa used to be the port of Canton, but the glory of the port has entirely departed, and all that is left is a few mud banks and an attempt at a naval station—this being the headquarters of the Chinese Fleet in Southern China. The original Whampoa Dock—the mother of the great establishment at Hong Kong—is here.

From Whampoa to Canton the river becomes busier and busier, with native craft all bound for the great city, and when Canton is reached the river is positively black with native boats. It is difficult to give, in short space, any idea of the city of Canton, which, though exceedingly interesting, is also excessively filthy. The population is estimated at something like 3,000,000, and the river population at half a million. The streets are exceedingly narrow, and it is absolutely essential for one to have a guide to point out the places of interest and at the same time to prevent yourself getting lost. Ordinarily one visits the temples; but, to my mind, they are greatly over-rated. They are, as a rule, very dirty, and in the immediate vicinity beggars hang about in great numbers, and, if one looks carefully, lepers may be seen among them.

Among other places the guide takes one to are the silk and ivory shops, and here one may pick up beautiful samples of needlework at a very moderate cost.

Macao—the Portuguese settlement about 40 miles from Hong Kong—is the oldest European settlement in the Far East, the Portuguese first having taken up their residence there in 1557. After the cession of Hong Kong to the British the trade of Macao declined rapidly, and now large ships cannot approach nearer than about 5 to 7 miles, owing to the silting up of the river. Tea continues to be an article of export, also fire crackers, tobacco, and preserves. Essential oils are exported to some extent, and there is also a fair export trade in opium to America.

Owing to its being exposed to the south-west monsoon, and the quietude prevailing, Macao has become a frequent retreat for invalids and business men from Hong Kong and other neighbouring ports; indeed, it may be looked on more or less as a watering place, and it has a superficial resemblance to some of the watering places in this country.

JAMAICA, THE CROWN OF OUR WEST INDIAN
POSSESSIONS.

By E. W. MELLOR, J.P., F.R.G.S.

[Addressed to the Society in the Geographical Hall,
on Tuesday, December 4th, 1906.]

JAMAICA is a name probably associated in your minds with Jamaica rum and Jamaica ginger.

Quite right! Both rum and ginger are valuable products of that island.

But I shall hope to show you, this evening, that Jamaica has a greater interest for us than either rum or ginger; because Jamaica is the brightest jewel of our West Indian Possessions; because Jamaica is the most beautiful of all the West Indian Islands; and lastly, but perhaps of greatest interest to geographers, because Jamaica was discovered by Christopher Columbus before he discovered the continent of America.

Perhaps you are wondering how it was that Christopher Columbus happened to get to Jamaica?

Let me remind you, then, that Columbus was one of those early geographers who grasped the idea that the world is a sphere, and not a flat plain. Now, about the period 1470 to 1474, Columbus conceived the idea of a western passage to Asia. That is to say, that by sailing out into the Atlantic, ever westwards, Columbus believed that he would reach the further side, or Chinese side, of Asia. He was, however, to discover an effectual barrier to any such western passage to Asia (as he imagined) in the vast American continent, a discovery the magnitude of which he did not live to understand. Columbus persuaded the King of Spain to equip him with ships and crews, and he made four voyages of discovery. On the 25th day of September, 1493, he left the Bay of Cadiz, on his second voyage of discovery. Two months later he found himself at Cuba. Sailing thence in a southerly direction, he, to quote his historian, sighted "the blue summit of a vast and lofty island at a great distance, which began to arise like clouds from the horizon." This was Jamaica. On reaching the shore Columbus took possession, in the name of Ferdinand and Isabella of Spain, and named his new discovery "Santiago," though it has always been known by its Indian name, "Xaymaca," a name which signifies "a land of springs," and which name has been corrupted, and modernised, into Jamaica. Columbus remained three months in the island, and then sailed back to Spain. Nothing more was heard of him, nor of the Spaniards, in Jamaica for nine years, during which time he discovered the mainland of America. In 1503, during his fourth and last voyage, Columbus encountered a continuance of bad weather off the coast of Cuba. He lost two ships of his small squadron, and his remaining vessels were reduced to mere wrecks. He was forced to run them ashore, in a

sinking condition, in a cove on the north coast of Jamaica, which is known to this day as Christopher Columbus Cove. Columbus sent his most trusted officer, Diego Mendez, right home to Spain for a rescue ship. After waiting a whole year, rescue came, and Columbus was carried back to Spain, worn out with hardships and privations and by the infirmities of advancing years.

In 1520 the Spaniards founded a town on the Cobre River. This town they named St. Iago de la Vega (St. James of the Plain), St. James being the patron-saint of the Spaniards, and here was the seat of their government for the next 150 years. The English, when they took possession, called this town (which we shall visit) Spanish Town. The Spanish rule was one of great cruelty to the native Indians, and we find that the establishment of the negro slave trade was practically contemporaneous with the Spanish occupation. Now, in 1654, Oliver Cromwell, with the two-fold object of gaining wealth and glory, and of employing in foreign service officers and men whose loyalty he distrusted at home, turned his attention in this direction, and sent an expedition, under Admiral Penn and General Venables, with sealed orders, "to obtain establishment in that part of the West Indies possessed of the Spaniards." They captured Spanish Town on the 11th of May, 1655, and there raised the British flag, and Jamaica has been a British possession ever since. Spain naturally could not see so valuable a gem torn from her crown without an effort to replace it; therefore, three years later, in 1658, she sent Sasi, her ex-governor, with a thousand men, to recapture Jamaica. Sasi landed on the north coast, at Ocho Rios Bay, which we shall see. The British Governor, Colonel D'Oyley, attacked the Spaniards near Ocho Rios, and routed them so utterly that they fled, and poor Sasi escaped to Cuba, in a canoe, from a spot known as Runaway Bay, which spot we visit. The British rule was now permanently established.

Time will not allow me to refer to the remarkable vicissitudes through which Jamaica has passed during the 250 years of British rule, nor to the daring deeds of the fierce and hardy old buccaneers with which the West Indies rang in the early years of that rule. Suffice it then to say that the island first began to flourish during the governorship of Lord Windsor, in the reign of Charles II.; and to mention the glorious year 1834, the year of Emancipation, when it was enacted that all slaves in the Colonial possessions of Great Britain should be for ever free, on which thousands of negro slaves in Jamaica, and the other West India Islands, became free men.

Now let us for a moment consider the geographical aspect of Jamaica.

Jamaica is situated some 4,000 miles south-west of England, in that remote corner of the Atlantic Ocean known as the Caribbean Sea, and is one of that numerous group of West Indian Islands known as the Greater and Lesser Antilles. Jamaica is one of the former, and is, indeed, the third in size of the West Indian Islands. Cuba, the largest, contains 54,000 square miles: Hayti, or Hispaniola as it was formerly called, the second in size, contains 30,000 square miles; and then comes Jamaica, with nearly 5,000 square miles, its extreme length being 144 miles, with a coast line of 550 miles.

Jamaica is a mountainous island, and has been described as the "Gem of the Antilles." The name "Jamaica," as we have seen, signifies "a land of springs," and it is justified, for the island contains no less than 80 rivers, and where so much mountain and water exist, scenes of beauty also exist. The latitude of Jamaica is between 17 and 18 degrees north of the equator; the island is, therefore, considerably within the line of the Tropic of Cancer, and within the zone of perpetual summer.

We land from our ship at Kingston, the capital and largest town in the island; then we go to Milk River, where there is a famed mineral spring, and where we shall see something of the sugar industry; then up to Mandeville, on the higher ground, where the best oranges grow. Here we charter a sort of van with three horses, which enables us to explore the rest of the island. First we drive to the coffee plantation at Brokenhurst; then up to Malvern, in the Santa Cruz Mountains, the healthiest part of Jamaica; then down to the sea-level again at Black River, where much logwood is shipped; then to Savan' la Mar, the end of our journey westward along the south coast; thence we make our way to Lucea, a lovely spot, from which we travel along the north coast to Montego Bay, the second largest town in the island. At Montego Bay we learn something of bananas. Thence, by Brown's Town and Runaway Bay, to Ocho Rios, where the Spaniards made their last stand; and on to Port Maria, where Columbus first landed; thence to Port Antonio, the harbour of the American shipping trade; thence we turn inland, and finish our ramble at Spanish Town, the ancient capital of the Spaniards.

At the head of the lagoon which forms the harbour of Kingston lies the city, with its wharves and docks; and in the far distance the Blue Mountains, famous for coffee. The depth of water is so great that our ocean liner goes right up alongside the wharf. The tidal movement here, and indeed of the Caribbean Sea generally, is so small that it is almost imperceptible. In this it resembles the Baltic and the Mediterranean. On the wharf, awaiting our arrival, we find a motley crowd of black and white people, creole or mulatto lodging-house keepers, and negro custom-house porters, all interested in the ship, its passengers, or its cargo. These West Indian negroes, indeed, afford us much amusement. The black boys, dressed in scarcely anything at all, look like imps, or monkeys. They call to you to throw a sixpence into the water to dive for. You do so. Three or more boys swim away after it, and if you have thrown it some distance it may be quite a considerable swim. Their wet skins shine like polished bronze in the sunshine. Though they ask you for a sixpence, they will dive like this for a penny, and if you want change, will produce a shilling's worth from somewhere, suggesting a conjuring trick, for they don't appear to be inconvenienced by sufficient clothing to accommodate a pocket. In a very few minutes they come swimming back again. "Got it" is evident from the expression of their faces. Throw another coin into the water. Off after it they go, and they seem quite ready to repeat this performance any number of times without leaving the water.

When they do come out their cheeks are swollen as if with huge gum-boils; it is simply the pennies they have found, and which they have

thrust into their cheeks, the only place to put them, right down under water. They could not thus disport themselves outside the reef enclosing the harbour, for fear of sharks; but sharks seldom now come into the lagoon, driven away, it is supposed, by the constant traffic.

There is another denizen of the deep, which is welcome, and which is found plentifully in the West Indies—that is the turtle. Some we saw had just been landed from a coasting boat. They are all lying on their backs, and as they cannot turn over on land they cannot run away, and can only idly flap their fins, or flappers, until somebody turns them. The turtles will be shipped to England or America, and I suppose their eventual destination is soup! The turtle fishery is a remunerative source of labour and revenue.

In 1693, in the reign of William and Mary, the planning out of the new city of Kingston was entrusted to Colonel Sir Christian Lilly, of the Royal Engineers. He laid it out in the form of a parallelogram, one mile in length and half a mile in width; in plan, therefore, like a modern American city. Kingston was constituted a corporate town in 1801, and in 1872, in the reign of our late Queen Victoria, the seat of government was finally removed here. Kingston now has a population of upwards of 50,000, and is lighted by electricity and gas. There is an excellent system of electric tramways, to which I shall refer again. A cool breeze blows off the sea every day, from ten till four, and has received the name of "The Doctor," from its health-giving qualities. The straight, parallel streets, crossing each other at right angles, do not conduce to the picturesque appearance of the place, yet they are teeming with life and activity. We saw country people selling their fruits and vegetables to passing purchasers. One basket contained sugar-cane cut into lengths, and very fond, indeed, the black children are of chewing sugar-cane—aye, and many of the black grown-ups too! It requires strong teeth, but the negroes seem to be blessed in this particular. These market people often tramp long distances, carrying their fruits, vegetables, and other produce on their heads—always on their heads—the head seems to be the toughest part of the negro's body. If their wares are more than can be accommodated on the head, then they employ a donkey. There was also a man selling tobacco, not by the ounce, nor by the pound, but by the yard. It looked like coils of rope which he was selling! Not so. It was native twist tobacco made up into continuous coils, and mighty strong and crude it looked to me, yet it seemed to find a ready sale. And very jovial, too, this black gentleman seemed to be, sitting sheltered by his tattered umbrella from the fierce heat of the tropical sun.

In an adjoining square stands a memorial statue to her late Majesty Queen Victoria. It is of white marble, and has been admirably executed. The statue shows to advantage against the dark foliage of the poinzianas trees behind it. There were a number of the dark-brown seed-pods of the poinzianas hanging from the boughs. The open gate behind the statue leads to a large garden and parade ground. Beyond that, and at a distance of two miles from Kingston, is situated the U-park Camp. This park is about thirty acres in extent. One battalion of the West India Regiment is always stationed here, also a number of our British white troops. It is a

very healthy situation for the black troops, and fairly so for the white soldiers. There is, however, a splendidly healthy camp for our white men, nineteen miles away, up in the hills, and which we shall visit presently. Round this camp many mahogany trees grow. The camp possesses a good barracks, a parade ground, a swimming bath, a hospital, and everything to make life pleasant. For example, some of the officers played polo on the Saturday afternoon I was there. The polo, of course, brings to the camp a number of visitors, and on these occasions the band of the West India Regiment plays. These black soldiers looked very picturesque, in their red Zouave jackets, and white turbans, with long red tassel. The bandmaster was an Englishman, and wore a white helmet. I was agreeably surprised with the quality of their music, especially of the wood wind, the expression being excellent, and a great credit to their trainer. We, being unused to tropical heat, in a town like Kingston, down at the sea-level, go out by the electric tramcar to Constant Spring Hotel, which is 600 feet above the sea and six miles inland. This is an excellent modern hotel, placed on the site of one of the oldest and most famous sugar estates in Jamaica, and which derived its name from its unfailing supply of water. Constant Spring Hotel has a frontage of 400 feet, and is three storeys high. As the ground falls from here all the way down to Kingston there is a splendid open view from the hotel. The mountain in the background is a part of the Blue Mountain Range, and its volcanic origin may easily be recognised from its peculiar rolling formation. Immediately opposite my bedroom window at Constant Spring was a handsome cocoa-nut palm-tree, and novel as all tropical vegetation was, it impressed me very much. We also saw that striking feature of Jamaican life, the "John Crow," the name familiarly given to the Turkey buzzard, which are a species of carrion vultures. These John crows perform so useful and sanitary a work, as scavengers, that they are not allowed to be molested, and anyone shooting a John crow is liable, I was told, to a penalty of £5. In consequence of this, they are fearless of man, and fly almost within arm's length. A peculiarity of their flight is that they never seem to flap their wings, but appear to sail through the air.

We will now visit the great health camp of the white troops, up in the Blue Mountains, a journey of nineteen miles from Constant Spring. We pass through a straggling village, called Gordon Town, the halting place of troops on the march: so we halt there also, opposite what seems to be the principal shop of the village. (See Fig. 1.) The walls are made of wattles, and the roof of thin split boards, called shingles. The shop is lighted by a suspended oil lamp, and oil and fruit seem to be the chief wares. Inside we saw the negro lady who runs the shop, and some of her children, or "pickneys," as she would call them—an abbreviated form of "pickaninnies." The women are generally showily dressed, being fond of bright colours. When going to or coming from their work they tie a string round their hips, through which they draw their skirts, so as to keep them well out of the dust and dirt; their legs are thus bared from the knee downwards. They step out with an easy, swinging, jaunty gait, the result of carrying heavy weights on their heads all their lives. They nearly

always greet you with a good-tempered smile, not to say grin, and a "Marnin', Massa," and a "Marnin', Missis."

Having changed our horses at Gordon Town, we continued our climb, and notice the many corkscrew bends of this mountain road. At one place there was a deep ravine, with precipitous sides, between us and the face of the opposite hill, along which we passed when we rounded the next bend. On that hill we saw a little church, the ministrations of which are performed by the chaplain of the camp, still some five miles higher up; so that clergyman has the two duties, rather hard work, I should think. Our road passed amongst tamarinds, orange trees, palm trees, and banana groves, but as we got still higher the vegetation became less tropical, and we found such plants as grow in our more temperate zone.

Having finished our nineteen miles' climb, we arrived at the Newcastle Camp, at a height of 4,130 feet above sea-level. Froude describes it thus: "High up on the mountain side, more often in the clouds than out of them, the cantonments of the English regiments. The slope where they had been placed was so steep that one wondered how they held on. They looked like tablecloths stretched out to dry." This simile of Froude's is not inapt, for at this altitude the rain-clouds suddenly gather round the mountain tops, and discharge themselves so rapidly that it has been compared to the squeezing of a wet sponge. The barracks rise, tier on tier, for 500 feet. The camp was established up here at Newcastle for military and sanitary reasons. Down at Kingston and at Port Royal our white soldiers were liable to yellow fever; the authorities, therefore, decided to establish a camp up in the mountains, where the climatic conditions were more like those of England, and they found it here at Newcastle. Then, too, in the seclusion of this mountainous region, the soldier is free from all the temptations to dissipation which abound in the town below, and which are so fatal to the white man in the tropics. On the levelled drill ground I got into conversation with a soldier in khaki, and filling our pipes, I found that he was one of a detachment of Lancashire Fusiliers, then quartered there. I could not help thinking to myself what a remarkable coincidence it was that I, a Lancashire man, just come from Bury, the depôt of the Lancashire Fusiliers, after crossing 4,000 miles of ocean, and climbing 4,000 feet of mountain, should all unwittingly light upon Lancashire Fusiliers up here.*

It is said that when Queen Isabella of Spain asked Christopher Columbus what Jamaica was like, he crumpled up a piece of paper and placed it before her, as a correct delineation of the island. Well, I think these mountain tops very well convey the idea of the crumples of that piece of paper. What a wonderful extent of view we get here! Nineteen miles away is the harbour of Kingston, and across that harbour, or lagoon, we can see, twenty-five miles away, the spit of land, or reef, on which stands Port Royal!

The Hon. H. T. Ronaldson, a member of the Jamaica Legislature—hence the title of honourable—invited us to visit his country property at Springfield, on the Milk River, some forty or fifty miles

* I hear that since my visit the authorities have discontinued the use of the Newcastle Camp.



FIG. 1.—JAMAICA—NATIVE SHOP, GORDON TOWN.

[E. W. M.]

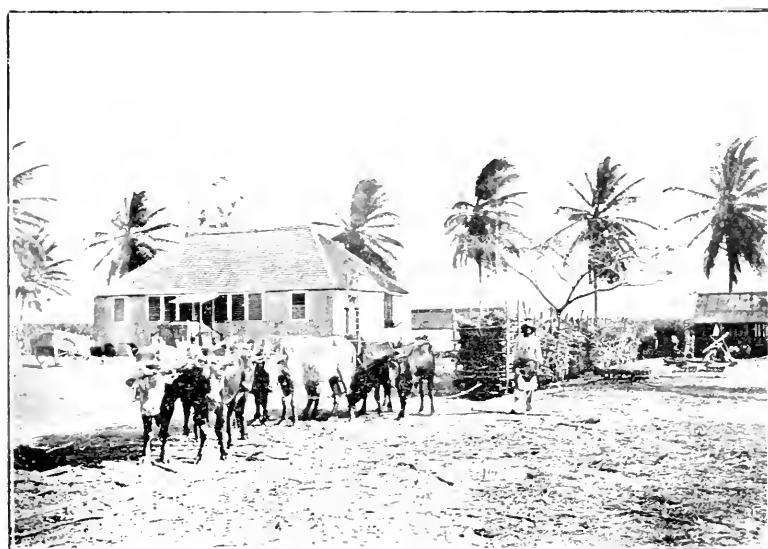


FIG. 2.—JAMAICA—SUGAR CANE TRUCKS, MONEYMUSK WORKS. [E. W. M.]

west of Kingston. It behoves all newly-arrived Europeans to avoid the mid-day heat, so we travelled by the afternoon train of the Jamaica Government Railway. Our host met us at the station where we left the train, with his pair-horse "buggy," the carriage of the country. As there is no twilight in the tropics, it quickly becomes quite dark, after the sun goes down, so we had the strange feeling of driving off into the unknown for about two hours. Our home for the time being was built in the bungalow style, on one floor, and was a good example of a West Indian house. The windows were all protected by closed jalousies. When our hostess wanted some oranges, she just sent a black boy up an orange tree to gather some; and, truth to tell, I ate a quantity of her oranges.

In Jamaica all country properties, if they are not sugar estates, coffee plantations, or banana cultivations, are called "Pens." Now, Mr. Ronaldson's property is a Pen, and he rears cattle and horses here by the thousand. To call up the horses, Mr. Ronaldson's head man, a negro named Myers, rode on to a little mound, and, sitting motionless on his horse under the shade of a mango tree, would whistle in a peculiar way, and the horses would come trotting up from all directions in answer to the call. The animals come down to the stream to drink. We looked down stream, and saw a hurdle or fence placed in and across the river. This not only keeps the cattle from straying, but prevents the alligators coming up from the sea. Shortly before our visit an alligator had carried off some lambs.

The Springfield Pen is bounded on the western side by the Milk River, which rejoices in the possession of a hot mineral spring, which the natives tell you is a sure cure for rheumatism, gout, and all such complaints. Here is the Milk River Bathing Establishment. The spring is a thermal saline-calcic, and its temperature is 92 deg. Fah. I have myself seen live fish swimming in the warm water in one of the bath-rooms; it had found its way there from the adjoining river—indeed, fishing is one of the few amusements of this spot. A picnic, to which our kind hostess took us, afforded us a splendid opportunity of studying tropical foliage. We saw the ordinary orchid of the West Indies, growing on boughs overhanging the water, to which they are self-attached. Of very great beauty is the variety of creepers, which hang so gracefully from bough to bough, and unite the whole in one delicate tracery. Over our heads passed green parrots in rapid flight, while gorgeous little humming-birds flitted from flower to flower.

Mr. Ronaldson kindly took us to see a large sugar estate and factory near his place. As far back, I believe, as the reign of Charles II. sugar was first shipped to us in England, the beginning of a trade which was a fruitful source of wealth to the colony, and which, in the eighteenth century, brought Jamaica to the zenith of her prosperity. The canes grow to a height of 6 to 10 feet, and are jointed at intervals all the way up, terminating in long sharp leaves or blades. The sugar cane is propagated by cuttings from the root end, which are planted in trenches, in the spring or autumn. A plantation lasts from six to ten years. When the leaves at the joints decay, and the cane turns yellow, the plant has attained its maturity, and is ready for cutting down. The juice is pressed out of the ripe cane, and is

boiled down, until the sugar crystallises out. We saw a native cane mill. The women were carrying the cane cut into such lengths as they can easily carry on their heads. The canes are then passed through rollers turned by a horse, which was yoked to a long pole. The juice runs along a wooden trough, and drops into a tub below. The juice is next boiled, and run into moulds, out of which, when cold, the sugar is turned a dark crystalline mass, about the size, and shape, as if it had been turned out of a child's sea-side bucket or a small flower pot. This is, of course, the old-fashioned, rough-and-ready way of doing things, by the native cultivating his own sugar patch. Things are very differently managed by the large planter, with hundreds of acres under sugar cultivation.

At the Moneymusk Estate, which we visited with Mr. Ronaldson, the cut canes were brought to the mill, piled up in a train of narrow-gauge railway wagons, and drawn by a team of eight, or ten, or a dozen oxen, according to the number of wagons in the train. (See Fig. 2.) You will judge the extent of this Moneymusk sugar estate when I tell you that there are some nine miles of narrow-gauge railway to connect up all the cane-fields with the mill. So palatable and nutritive is the juice of the sugar cane that every creature that munches it during the harvest—a thing they are very fond of doing—negroes, horses, mules and cattle, all seem to derive vigour from it, and to grow fat and well-looking. Arrived at the sugar factory, the canes are fed by the men on the travelling lattice creeper. This creeper reminds us of those attached to the scutching machines of our cotton mills, only, of course, this is much rougher and stronger. The lattice creeper delivers the canes to a series of powerful and heavy iron rollers, driven by a large steam engine. The pressed juice is passed on through tubes to the pans, while the crushed and broken woody fibre of the canes, which is now called "trash," quickly dries, and makes excellent fuel for the steam boilers. The place is lighted by electric light. Here, too, we see Indian Coolies. Not only does he differ from the negro in the more refined type of his features, and the long dark hair, instead of the woolly pate, but even his dress is different, and he retains his Indian turban and other clothing. The introduction of the coolie has proved a great benefit to the colony, as these Orientals are so much more reliable than the negroes, whose labour cannot be depended on; they have too great a tendency to throw down their tools when they have satisfied immediate requirements, and not to work again until they are in want. The coolies are indentured for five years, after which many of them settle in the island, while others return to India with the bulk of their earnings.

The Moneymusk Sugar Factory is a large place. It contains vacuum boiling pans, and all modern scientific appliances, by which the cane-juice is treated, until the sugar crystallises. The scientific text-books speak of it as an "amorphous mass," and tell us that sugar crystals are "monoclinic prisms, which have a specific gravity of 1.606." But I will spare you scientific technicalities! The syrup which comes from the evaporating pans is molasses or treacle, from the fermented juice of which is distilled that well-known spirit, rum, to which Jamaica has given its name, which is so necessary to the sailor's glass of grog, and which is not altogether unknown in some

teacups in this country! Well, rum is distilled at these works, and, indeed, at all the Jamaican sugar works.

Notwithstanding all mechanical improvements, and greater applied science, the West Indian planter has found it well-nigh impossible to compete with Continental subsidised beet-root sugar, and, in consequence, many sugar estates have gone out of cultivation, and the island has been impoverished. It is the distillation of rum which now chiefly makes the present estates remunerative. We saw casks of sugar and puncheons of rum on their way to the wharf for shipment. Each dray was drawn by a team of oxen. Now, these huge teams are very awkward and clumsy affairs to meet, so one or more of the attendant negroes emits strange and weird sounds on an old cow's horn, which he carries for the purpose, and with which he gives warning to any traffic which might be coming round a bend in the road.

The care and the breeding of these draught cattle is an important matter. One of the daily incidents is taking the working herd to water in an adjacent pond. It has been found that East Indian cattle, owing to some difference in their structural anatomy, are better for draught purposes than either the native or the European animal, and that the cross between the East Indian, such as the Zebu and the Mysore, makes about the most useful stock for draught purposes that can be desired. You, therefore, commonly see the humps and long horns of the Indian beasts. There are, of course, the more ordinary breeds of cattle for beef purposes.

We saw and learned a great deal while we were the guests of our kind friends at Springfield, Milk River, and we said good-bye to them with a feeling of sincere regret. Thence we went to Mandeville, which has the reputation of being one of the most healthy places in the island. It is 2,131 feet above sea-level, and consequently has a more equable climate than Kingston, nearly sixty miles away. Mandeville strikingly resembles an English village, the houses being grouped round a square, or common, containing several acres of grassy turf, only, as Froude says, you have here silk-cotton and mango trees instead of the English elm. At one corner of the common is the Parish Church, with its square tower, in which hangs an old peal of bells. We attended service here on the Sunday, and were much impressed by the hearty, though slow, singing of the hymns by the black congregation. The school-house adjoins the church. The school-children sat up in the gallery, which has a carved open-work front, and we were highly amused to see a long row of bare black toes poking out through the open-work. The children walk barefoot to church with their parents, who are wearing smart boots, though on week-days they, too, may go barefoot. Indeed, on Sundays, the whole costume of these people displays the utmost possible smartness and brilliancy of colour.

On the opposite side of the green to the church stands the Court-house, quite an imposing building for this small town, in which I heard an amusing pig-stealing case between two black men of great volubility.

I don't think I have ever seen so many fireflies as I saw here at Mandeville; I have seen them elsewhere, but, I think, none so

numerous, nor so brilliant, as the Mandeville fireflies. When night succeeds day these fairy lamps appear flitting about through the trees, and meandering, now up, now down, over this common, and, as it were, peopling the air, to your imagination, with Shakespeare's fairy characters from the "Midsummer Night's Dream." They are a species of flying beetle, whose antennæ become brilliantly phosphorescent, from which the Jamaicans sometimes call them "Gig-lamps."

At another corner of the Green, or Common, at Mandeville is the Market. Mandeville Market seems to be one of the most important, and most largely attended, of all the markets in the island. As we entered the market enclosure we noticed a bare-footed negress, in a cotton dress, selling yams. The yam is a sort of cousin to the potato, and, indeed, in the tropics, the yam takes its place. The yam is an herbaceous twining plant, or vine, with large tuberous roots. These tubers in the West Indies often grow to three feet in length, and weigh as much as thirty pounds. This woman's yams were very large. When boiled or roasted they are mealy, like a potato—indeed, I found the yams just like a rather solid potato.

Now we come to a stall of cassava-cake sellers. The cassava is a shrub, which grows to a height of about eight feet; it has a rather broadish leaf and beautiful white and rose-coloured flowers. It is a remarkable fact that the roots of the cassava when eaten raw are a fatal poison both to man and beast, but when properly prepared with heat form a valuable food, on which the natives of the West Indies, and of South America, largely subsist. It is the juice which is the poison; this is carefully pressed out, and the roots, which are white, soft, and farinaceous, are ground into flour. The flour is baked in thin, round cakes, and very good I found them with afternoon tea. From the starchy parts of pure cassava flour is manufactured the "tapioca," so well-known to every English housekeeper.

So far, we have been only in the more populous and fashionable parts of Jamaica, but I was desirous of visiting the more remote districts of the island, and those not so easily accessible by railway. We, therefore, chartered at Mandeville a vehicle, which we designated "the Van," and in which we travelled for nearly 400 miles; and I now ask you to accompany us on this "Van" journey. I may describe the "Van" as a light, three-seated char-a-banc. Our black driver sits on the front seat, and beside him is our food-basket, which also did duty as our medicine-chest, because it carried those necessary medicines, without which it is never safe to be in the tropics. Mrs. Mellor and I sat on the second seat. The third seat was removed to accommodate our luggage. We had a tarpaulin roof, which served as a protection both from sun and rain, the latter of which in these latitudes comes down with great suddenness and violence. The van was drawn by three horses abreast, and we drove them, on an average, nineteen and a half miles a day.

The high lands, the red soil, and the climate of the Mandeville district all conduce to the excellent growth of coffee. Our first stop, therefore, on leaving Mandeville, after a seven miles' drive, was at the coffee plantation of Mr. Wynne, at Brokenhurst, one of the largest coffee plantations in Jamaica. The coffee trees, or bushes, are planted

about eight feet apart, and grow from three to eight or ten feet in height. In appearance they greatly resemble a laurestina, and their blossoms are fragrant white flowers, something like clematis. A cold, high wind inflicts severe damage on the coffee; so tall trees, with whitish bark, called "trumpet trees" from their long, straight stems, are planted amongst the coffee, to break the force of a high wind, and to afford some protection.

The coffee berry, when ripe, is of a bright, purplish-red colour, very much like a cherry in appearance. The first business, of course, is to pick the ripe coffee berries, as we saw a barefooted negress doing. She put the red, fleshy berries into the large basket on her head. The berries have then to undergo quite a series of processes before the coffee is ready for market. The ripe berries are first brought into the works by the negroes with the baskets full of berries on their heads. The berries are then run through the "pulper," a machine which takes nearly all the pulp off the kernel. Mr. Wynne had a steam engine to turn his machines, which I noticed was made by Messrs. W. H. Bailey and Co., of Salford, and which was pleasing to see in a land where I found that nearly all British-made things were beaten out by American manufactures. The coffee kernels, after coming from the pulping machine, are run into tanks, where they are frequently agitated to wash off any remaining pulp. After the coffee kernels are removed from the tanks they are spread out thoroughly to dry in the sun, on large platforms, or terraces, made of cement. These platforms are called "barbecues." (See Fig. 3.) Mr. Wynne's barbecues, at Brokenhurst, cover an acre of ground. The name "barbecue" is derived from the aboriginal Indian name for the places on which they dried their fruit and fish and hogs. Hence we have the term "barbecued pig" for dried pig. For example, the well-known lines in the "Ingoldsby Legends":—

"Now the festive board with viands is stored,
Savoury dishes be there, I ween;
Rich puddings and big, a barbecued pig,
And ox-tail soup in a china tureen."

But to come back to the coffee. We saw the men spreading the coffee kernels, or corns, over the barbecue. Some little art is required in doing this, so that the layer of coffee corns shall be the proper thickness, to ensure the proper and equal drying. So important to the resulting quality of the coffee is the even, or regular, drying of the coffee corns that they undergo a treatment which suggests haymaking. They are raked into rows; thus each coffee-corn is turned over, those underneath coming to the surface, and so forth. This operation is known as "rowing" or "turning" the coffee. If the partially-dried coffee once gets wetted its quality and flavour are damaged, and the selling value impaired. To guard against any such loss the coffee planter and his people are constantly on the watch for the least sign of rain, and if there is any appearance of a threatening cloud the rows of coffee are immediately pushed hurriedly along into little water-tight huts. When the rain is passed, and the barbecues are dry again, the coffee is brought out of

the huts, and again spread over the barbecues. When the coffee kernels are thoroughly dry they are brought into the works again, and are passed through a mill, which strips off the horny outer skin. This done, the two halves of the kernel come apart, and are then the coffee corns, with one flattened side, and one rounded side, as we know them. The coffee corns are then graded into sizes, and the bad corns are thrown out. This process is called "sizing," and is accomplished by passing the coffee through sieves of different gauges of mesh. The coffee is then ready for packing in casks for shipment. And there we will say "Good-bye" to coffee; only let me add that if you get hold of a cup of the right quality of Jamaica coffee you will find none better.

On our first long day's drive we stopped the van in the village of Santa Cruz for lunch, and to bait the horses, which consisted simply in letting them ramble beside a stream, and crop the grass and drink the water. The village consists of a few stores—as the open-front shops, with their shingle roofs, are called here—after the American way. That this is an old village is evidenced by its Spanish name, Santa Cruz, and it gives this name to the mountains running from here down to the south coast of the island.

We spent the rest of the day in driving up to Malvern House, the highest point of the Santa Cruz Mountains, and we arrived in the court-yard in pouring rain. Nevertheless, it is probably the driest region of the island, with a charming climate, exceptionally beneficial in all kinds of lung trouble. Malvern House is a remarkable old house, formerly the residence of a sugar planter, now occupied by Mrs. Lawrence, who is glad to take lodgers, who come up to these mountains for their health. From the house we get a fine view, looking for five-and-twenty miles, over valley and hill, in a westerly direction. Down at sea-level, in the bottom of the valley, in the middle distance of our view, is the town of Black River, where the river of that name runs into the Caribbean Sea. To get there we drive through the open gate, and immediately down a hill four miles long, and so steep that the hind wheels of the van had to be tied with rope to prevent their turning round. Arrived safely at the bottom, a good smart drive along the flat country, at sea-level, brings us into the main street of Black River. It is a street of stores, or shops, in which the shop windows are conspicuous by their absence. As the buildings seem mostly of wood, a fire here would be a serious matter. As one safeguard, however, against such a catastrophe Black River is lighted by electric light, and I must add that I was not a little astonished at the enterprise of this remote little West Indian town. The electrical machinery is worked by steam engines burning wood. We noticed the two negro policemen; their white tunics and helmets were in strong contrast to their black faces and hands. At the further end of this street is the bridge spanning the river after which this town is named.

Black River is not so healthy as Mandeville and the Santa Cruz Mountains. Adjoining the river is a swamp, the home of mosquitoes, the bite of which will probably cause an attack of malarial fever, consequently few tourists come to Black River. Yet it is an interesting place, for it is the chief shipping place in Jamaica for logwood and

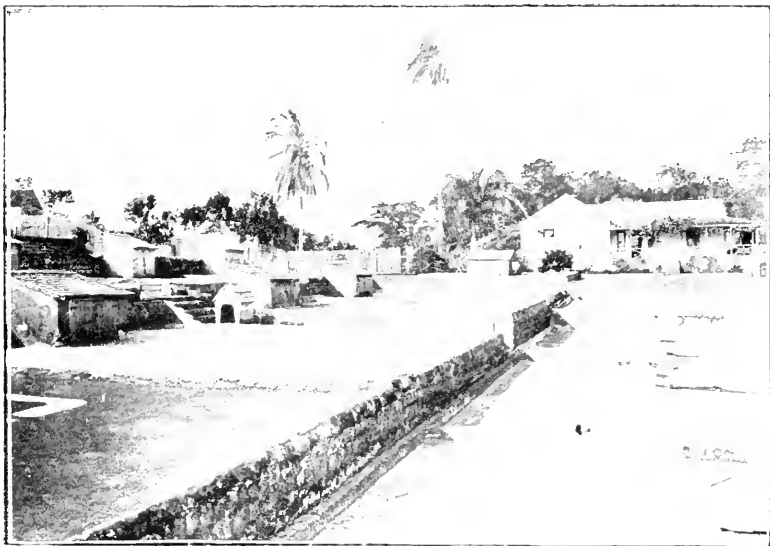


FIG. 3.—JAMAICA—COFFEE BARBECUES AT BROKENHURST. [E. W. M.]



FIG. 4.—JAMAICA—"DUGOUTS" AND BUILDER. [E. W. M.]



fustic, which are grown largely in the island, especially logwood. These two valuable dyewoods are stored in sheds, on either side of the mouth of the Black River, and then conveyed by boats to ships lying outside. This seems to be the great logwood-producing district of Jamaica. We also visited a little cove, a few miles west of Black River, to which the logwood trees, when cut down, are brought. They are then loaded in small coasting boats, and taken to Black River, or one of the shipping harbours along the coast. Through the rocky entrance the coasting boats, with their load of logwood, pass out into the open sea, and coast along until they come to Black River, or Lucea, or one of the larger bays, where the wood can be transferred to a large ship. I cannot describe to you the beauty of the scene we saw. The blue water, almost tideless, the foliage on the bank, and the cloudless, deep blue tropical sky above. The smaller boats, or canoes, used by the native people are shaped and hollowed out of the trunk of a single tree, generally the ceiba, or silk-cotton tree, and sometimes out of the bread-fruit tree. We noticed a negro boat-builder at work. (See Fig. 4.) There was no joint in his boat, and the grain of the wood ran broadly down its side. He was working under the shady and spreading branches of a bread-fruit tree, the bright green leaves of which are very large, and are divided into seven or nine spear-shaped points. The bread-fruit is pale green in colour, globular in form, and about the size of a child's head. It contains a fibrous pulp, which becomes juicy and yellow when ripe. It is a valuable tropical food-stuff, is prepared for use in various ways, and is said to resemble in flavour the crumb of wheaten bread, mixed with Jerusalem artichoke.

In the Black River district there is a beautiful bamboo avenue, sometimes called the "Lovers' Walk." This luxuriant growth of bamboo foliage extends along the high road, for two and a half miles, "those feather-like bamboos high arching overhead, and screening us under their noble canopy," as Michael Scott expresses it, in "Tom Cringle's Log."

Near the Bamboo Avenue we crossed a higher reach of the Black River by fording. Bridges are comparatively few and far between, so very often vehicles must go through the stream. When we forded this river, in our van, we met a cart and three horses also fording it. It is the general custom in Jamaica, when fording, to stop in mid-stream; then to turn the horses' heads up stream, and there let them rest, and be cooled in the flowing water. Their heads being up-stream ensures that clean, fresh water will flow towards them to drink. We stopped the van in the fords like this many a time, and so clean and so fresh is the flowing water that I have seen quite large fish swim through the spokes of our wheels while we have been so standing.

Higher up the stream we come to the picturesque Y. S. Falls. I do not know how they got this strange alphabetical name, but I do know that they are part of the Y. S. estate, and that a son of Thomas Scott, one of the judges of Charles I., arrived here in the latter part of the 17th century, and settled on the Y. S. sugar estate; this estate, therefore, possesses some antiquity. We noticed the luxuriant growth of tropical creepers over the water. To get to these Y. S. Falls we

had to follow a negro, who cleared the way for us with his cutlass, or machete, through the thick, long tangle of grass. We then experienced one of the drawbacks of a tropical country. Our clothes got pretty well covered with ticks, tiny insects which burrow into your skin, and set up a great deal of irritation and inflammation. After walking through the thick grass we spent an hour doing nothing else but pick ticks off our clothes. Ticks abound in grass in which cattle pasture, and they multiply prodigiously under a tropic sun. It is never safe to go off the roads and footpaths, and wander among the grass, or you will probably suffer. The white dress usually worn by the ladies has the advantage that these minute insects are easily seen upon it.

We now arrive at Savan 'la Mar, and have covered some ninety miles' drive in the van since we started from Mandeville. Savan 'la Mar (and the name shows its Spanish derivation) is the centre of 22 sugar estates, consequently much sugar is shipped from here: indeed, the one broad street of Savan 'la Mar is said to be made from the ballast dumped here by the vessels coming to load sugar. In 1744 a great hurricane and tidal wave swept Savan 'la Mar, and the houses, the people, and their cattle were destroyed. Therefore, Savan 'la Mar as we see it to-day is a comparatively recent place. At the mouth of the Savan 'la Mar harbour there is a station of the river or water police, erected upon the ruined walls of the old fort of Spanish times. Within the walls are two old Spanish cannons, greatly worn away, of course, by corrosion. We saw, sitting on the wall, a water-policeman, busily engaged chewing sugar-cane. At the time of our visit there were here a three-masted schooner, laden with rum for London, and a Russian barque laden with logwood.

Up to this point we have been travelling westwards, along the south coast of the island. Savan 'la Mar is the last town in that direction. Let us suppose, then, that we have taken one of the coasting boats and rounded the westernmost point of the island, and now arrive by water at Lucea, the most westerly town on the north coast of Jamaica. This town, Lucea, is in the heart of a deep bay of horse-shoe form, the hills at the entrance coming near together; while the harbour, where the town is situated, is a deep, almost circular, basin. We stayed at a large house, which rejoiced in the title Devonshire House, and was the only decent lodging-house at Lucea.

Saturday is market-day at Lucea, and we saw the people trooping along the main street, past Devonshire House, on the Saturday morning that we were at Lucea, each with their large baskets of market-wares on their heads, on their way to market. (See Fig. 5.) No doubt market-day brings a great many people into the town from the surrounding districts, yet the normal population of the somewhat inaccessible little town of Lucea is about 2,000; because the excellent shelter of its natural harbour causes to centre here the coasting trade from all the adjacent coves. The vessels which we pass in leaving Lucea are all logwood boats. Altogether Lucea is a peaceful and lovely spot, and for beauty and colouring its bay might be compared to a tropical Bay of Naples. The coasting vessels are often glad of a sheltered harbour like that at Lucea, as we saw one day when

near Lucea; the wind was suddenly rising, the water was being lashed into fury and the storm-clouds were rapidly gathering, the leaf-boughs of the cocoa-nut palms were being blown over to one side, and there was every indication of a heavy tropical storm, so we made for shelter before it became any worse.

Now travelling eastwards, along the north coast, we pass another of those beautiful sea-inlets, or coves, with which the shores of Jamaica are so abundantly indented. This large cove is called Mosquito Cove, no doubt from the prevalence here of mosquitoes, but those annoying insects did not worry me there. Do not imagine, though, that I escaped, for whenever and whenever mosquitoes could get at me they did. No doubt, fresh European blood is a more tasty morsel than that of persons who have lived years in the tropics. Mosquito curtains round your bed are a necessity. Beyond its discomfort, the bite of an ordinary mosquito is innocuous, but his brother of the swamp must be avoided because of the poison of malarial fever.

A twenty miles' drive now brings us into the Market Square of Montego Bay, the second largest town in Jamaica. In the centre of the square are tall and graceful casserina trees, which, I think, rather suggest willows. On the right, through the trees, is the large and handsome Courthouse. When Jamaica was taken from the Spaniards, in 1655, about 1,500 slaves fled to the mountains, and were called "Maroons," a name which signifies "hog-hunters." The Maroons led a somewhat lawless life, and frequently harrassed the town-dwellers. In 1796 two Maroons were found guilty here, at Montego Bay, of felony, and were sentenced to receive a few lashes at a cart's-tail, whereupon the body of Maroons took up arms and commenced a rebellion, which was only finally quelled by their being hunted by bloodhounds. The name of this place, Montego Bay, is derived from the Spanish "Manteca," which means "hog-lard," from the fact that the principal trade of this town during the Spanish occupation was the boiling down of swine's flesh into lard, of which large quantities were shipped to Havana and other Spanish ports. So at this place you have Maroons or Hog-hunters, and Montego Bay or Port for lard. That may have been the trade of Spanish times; I shall now show you something of the trade of Montego Bay under the English *regime*.

In a street just behind the Court-house is a manufactory for "Ippi-Appi" hats, which is the local name for those very soft and finely-plaited straw hats known to us as "Panama" hats. We saw a number of women plaiting Ippi-Appi hats, and two of them good-naturedly sat in the light in the doorway to allow me to photograph them. They will not all do this, for they are afraid you want to make fun of them. Their thick lips and woolly pates show that they are pure negroes, although they are West-Indian born. They had their plaiting in their hands. These Ippi-Appi hats cost in Jamaica from four to twenty shillings each, according to the fineness of the plait.

But a far greater industry here is the fruit trade, vast quantities of which, more particularly bananas, are shipped from Montego Bay, as indeed from all the larger ports of the island. The banana trade is so greatly the staple industry of Jamaica, that we must here give

it some attention. We have already seen that cane-growing and the sugar industry became a depressed and losing business, and that thousands of acres of sugar plantations went out of cultivation, owing to the competition of Continental subsidised sugar. In 1863 the experiment was tried of shipping bananas, as a fruit, to America. That proved so successful that the banana has very largely supplanted the sugar cane, and many sugar plantations have been converted into banana cultivations. We have seen that coffee flourishes in the cool mountain districts: the banana is quite different in this respect, for it prefers a hot climate, and will only grow in perfection on the rich plain land, as it draws much nourishment from the soil. To prepare the land for a banana plantation it must first be ploughed, with a very large plough, drawn by eight or ten oxen. The plants are then set in straight rows ten to fifteen feet apart. The banana plants or trees, as we may now call them, grow to a height of ten to fifteen feet. At the end of a year the first crop is ready for gathering. The tree bears but one bunch of bananas; when this bunch is gathered the tree is cut down, leaving a sucker, which forms next year's tree. This is continued for six or seven years, when the ground becomes so full of roots that it is necessary to plough it up and replant. We saw bananas being gathered. As the bunch hangs from the tree it is far above the reach of the cutters, and to bring it to the ground without injury requires considerable practice. With his cutlass, or machete, the cutter slashes the stem of the tree about half through; the weight of the bunch of bananas immediately causes the plant to bend down; as it bends, the man seizes hold of the stem at the lower end of the bunch, and at the same moment he chops the bunch from the plant with one blow of his machete. With another sweep of his machete he chops off the great crimson-purple bloom at the end of the stem in his hand. The bunch is then ready to be carted off to the wharf. Each bunch of bananas, and they weigh about 70 lbs. each, is carried on the heads of black people from the railway wagons, across the wharf, up the ship's gangway, and so to the hold of the ship. These black porters, men and women, receive a check for each bunch they carry on board, and are paid accordingly. Our departure was delayed until the whole of the consignment, some 27,000 bunches, was on board, and a very hot job it was, I can tell you, under the tropical sun, to carry all that quantity of fruit on board.

At Montego Bay, however, the steamships are not able to come alongside the wharf, but remain out in the deeper water of the bay. The bunches of bananas, therefore, have to be carried out to the steamers in little boats; the bananas are carried down on the heads of the black people, on to the jetty, just as in the other case, but instead of going directly on board ship they must be handed down into the small boat. This, of course, necessitates an additional handling, and is therefore more costly. When the small boat is loaded as full of bananas as it can safely carry the fruit is generally covered with the large banana leaves, to keep the heat of the sun's rays off it, otherwise it would probably become over-ripe before it arrived at its destination, which would mean great loss to the shipper. The boat then pushes off with its luscious freight to the ship

waiting out in the bay. I am informed that taking an average of years the cultivation of bananas yields £10 an acre. The banana is a very wholesome and easily-digested fruit, especially with a little bread or a biscuit, and it is said to be as nutritious and sustaining, if not more so, than any farinaceous food of the same value.

A twenty-two miles' drive along the coast brings us to the little town of Falmouth. Although Falmouth is one of the oldest towns in the island it has nothing specially to interest us, as it is only a repetition of what we have already seen; yet its antiquated waterworks, at Martha Brae, are both interesting and picturesque. These consist of a reservoir, and a large antique bucket water-wheel, which raises the water to a sufficient elevation to supply Falmouth with water by its own gravitation. This, I am told, is similar to the Moorish methods of irrigation.

We now come to Brown's Town, after driving eastwards for another twenty-five miles. Brown's Town possesses only one hotel, which is known by the modest title of "Mrs. Delisser's Lodgings." The open windows on the ground floor are those of the dining-room, and the drawing-room is immediately above; to get to the drawing-room, when you have dined, you must come outside, and ascend by the broad flight of stone steps. The real ruler of the establishment at the time of our visit was Emma, the black waitress, or butler, as she would call herself. Emma was, as the Yankees would say, a real smart girl. Quick and sharp as a needle, full of *reperte* and laughter, she would see that you were well attended to, would give you useful hints for your journey, and took jolly good care that you did not go before you paid your bill, or before you gave her a good tip, too. Emma was the ablest and smartest black servant we encountered, but I do not think that you will find her there now, for she confided to us that she had a nice young black man, and was not going to remain single very long.

The district round Brown's Town is sometimes called "The Garden of Jamaica," and we could indeed understand why it should receive so delightful a name when we came across a field of growing pine-apples, and saw how large and luxuriant the fruit was. Luscious pine-apples grow in profusion here, and are as cheap as plentiful. Froude writes: "Pine-apples, of which one can eat as much as one likes in these countries with immunity from after-suffering." And from personal experience I am bound to say that I coincide in Froude's opinion.

We passed a large pond, known as Friendship Big Pond. In front of the pond are some graceful bamboo trees, which have been compared to ostrich feathers. These bamboos grow to a height of thirty feet and upwards. We stood under one of the bamboos, down by the water's edge, watching some lovely little green lizards. Our movements attracted the attention of some negresses, who were road menders. By road-menders you must more correctly understand breakers of stones for mending the roads, for here we do not see men standing over a heap of stones at work with a long hammer, such as we are accustomed to in England. In Jamaica the negro women sir

on the stone-heaps, hammering away at the stones between their bare feet. You generally find them at this work in groups of three or four.

Quite a short drive from Brown's Town is Runaway Bay. You will remember that at the outset I told you that when the Spaniards were finally routed, near Ocho Rios, in 1660, their leader, Don Sasi, the last of the Spanish Governors fled, and escaped to Cuba in a canoe, from a spot, called from that circumstance, "Runaway Bay."

A few miles' drive along the coast, eastwards, brings us to Ocho Rios Bay, the historical spot to which I have already alluded; for it was in this bay of Ocho Rios that Don Sasi landed in 1658, with thirty companies of Spanish infantry, to recapture Jamaica from the English; it was here that the Spaniards were utterly routed by Cromwell's troops, under Colonel D'Oyley; and it was from here that Don Sasi fled to Runaway Bay. The place retains its Spanish name, "Ocho Rios," which means "Eight Rivers," so called because eight streams find their way into the sea in the immediate vicinity, and nearly every one of the eight has a beautiful waterfall. We noticed here the usual Jamaican practice of erecting a foot-bridge, so that pedestrians can cross the river with dry feet, while all vehicles, horses, and cattle must ford the river. We visit some of these waterfalls, and first the famous Llandovery Falls, which take their name from the neighbouring sugar estate of Llandovery. The Llandovery Falls are famous, not merely for their own beauty, but because the view of the falls was adopted by the Government for the Jamaican postage stamp. This view has, therefore, gone broadcast over the world, in stamps on letters, and so must be familiar to multitudes, who possibly have thought that the pretty waterfall postage stamp was an imaginary picture. These Llandovery Falls will, I fear, soon begin to lose their fame, for after the period of mourning for Queen Victoria the Government adopted the Jamaican coat-of-arms for their stamps.

A few miles further on are the falls of Roaring River, the largest falls in the island. The roaring of this river can be heard for a long distance, even some way out at sea, hence the name. Roaring River differs from most rivers and streams, which tear and cut their way through soil and rock, thus forming their falls by erosion. Roaring River is charged with lime and silica in solution, and these it deposits in layers and walls, which check and deflect the flow of water, turning it now to right, now to left, and immediately new deposits and new channels begin to form. These falls, then, are not the drop of one solid body of water, but, so to speak, are the agglomeration of an immense number of small cascades, which shine a dazzling white in the sunshine, as they fall over the bluff, or promontory, formed of its own deposit.

Another beautiful river of the Ocho Rios group is called the White River, and we saw, on our visit, "washing-day" at one of the little villages on the White River. The linen and clothes to be washed are taken into the river, scrubbed on the large stones and boulders, and rinsed and soaked in the running waters of the river. We noticed that the river here looks white and seething, just as if it had come over a fall, and such is, indeed, the case.



FIG. 5.—JAMAICA—STREET IN LUCEA

[E. W. M.]



FIG. 6.—JAMAICA—TOM CRINGLE'S COTTON TREE.

[E. W. M.]

A short distance further up are the falls of White River, and very beautiful they are, with the glints of sunshine through the leaves of the surrounding trees playing upon the rapidly-moving masses of water. These falls have a certain resemblance to the Llandoverly Falls, the original of the postage stamps, only, I think, of the two, these are the more beautiful. In the south of the island we visited Black River, and here is White River in the north. If we follow the stream down to where it flows into the sea, we can appreciate the reason for its name—the White River—for although the water seems clear and limpid higher up, down here, where the river is wider and more shallow, we see that the water holds so much lime, and so forth, in suspension that the river has an almost milky appearance. This is most marked as the river-water mingles with the clear blue water of the Caribbean Sea. The milky, or limy, water spreads out in an ever-widening fan-shaped form, in the clear salt water for a long distance, before it ceases to be distinguishable.

Continuing our way eastwards, for about ten miles, we come to Port Maria, another spot of great historic interest, for 410 years ago, on the 5th of May, 1494, Christopher Columbus, in his second voyage of discovery, sailed under this headland, and dropped anchor in this picturesque bay. Columbus thought it so beautiful a harbour and anchorage that he gave it the name of "Santa Gloria." As we have already referred to the fortunes of Columbus, I will only add that this place was subsequently called "Port Sancta Maria," which has been abbreviated down to Port Maria. The headland of Port Maria was the nearest approach to a cliff running out into the sea that I saw in the island. The straggling street of the little town stretches some distance up the bank of the river. Port Maria suffered great devastation from the fearful hurricane which swept over the island in August of 1903. The north-east side of the island bore the brunt of the disaster—for disaster it was—houses and buildings were levelled to the ground, and plantations were torn up by the roots. Port Maria was one of the places which suffered worst; my photographs may therefore be historical, for I took them three or four months before that hurricane.

Another place which suffered severely in that hurricane is Port Antonio, at the north-east corner of the island. Port Antonio is one of the finest natural harbours of Jamaica, and it is geographically in the most advantageous position for shipping to and from the American continent, consequently Port Antonio monopolises almost the whole of the American shipping trade, passengers, produce, and goods. We saw a large American hotel; here are the headquarters of the American Fruit Company; here they reckon in dollars; and here are American stores: so the whole town may be said to be Americanised. An American gentleman whom I met remarked to me, "I have visited most parts of the world, but I do not know any place more beautiful than the arrival at Jamaica. Port Antonio, with the sapphire sea below your ship, the tropical vegetation coming right down to the shore, the beautiful constellations above you, is vurry beautiful." Speaking of the happy-go-lucky characteristics of the Jamaica black people, the same American gentleman told me

that he had asked an old negro, who was sitting doing nothing, "Well, how do you pass the time?" "I do not," he replied; "the time passes me!"

We saw a group of people getting in their cacao harvest. Do not confound this with the large cacao-nuts, which yield such refreshing water or milk, and which grow on those lofty palm trees; no, these are pods, which contain the seeds known to you, probably, as cacao-nibs. These seeds, or nibs, are dried in the sun, and go to make the cocoa, or chocolate, which you drink. So this is another of Jamaica's products!

Perhaps the finest and most beautiful of the Jamaican rivers is the Rio Cobre. It has been compared to a Scotch salmon river, but the feathery bamboos on its bank show that it is tropical. The Rio Cobre enters a fine gorge, called Bog Walk. "A limestone mountain seems to have been split in twain, the river sides, precipitous as can be, having in the lapse of ages become clothed with foliage of every variety of form, and grandeur, and tint." So writes Sir Sibbald Scott, of Bog Walk. But the river is here put to an utilitarian purpose, for at the foot of that steep mountain side a low dam turns a large portion of the river into a line of pipes, which take the water to a power-house, where, by means of turbines, it operates electrical machinery, which, in turn, generates the current for working the electric trams at Kingston, twenty-two miles away. When I tell you that this pipe-line is one mile and an eighth long, that it is eight feet in diameter, and made of quarter-inch steel plate, you will realise that it is a steel tunnel, through which a man can walk upright, and you can try to imagine the prodigious quantity of water which passes through this pipe every twenty-four hours. The water, having operated the turbines, is returned by the great curved pipe to the river again, and does not seem one whit the worse for the duty required of it. To those of you who are technically inclined it may be interesting to know that the current from this power-house is taken the twenty-two miles to the transforming station at Kingston, at a pressure of 15,000 volts, by bare wires, supported on steel poles planted on concrete. We have here got to a point considerably below Bog Walk, and near to Spanish Town, where the Rio Cobre is again made to do duty, by being laid under contribution for irrigation purposes, consequently it loses the rapid rushing of the Bog Walk gorge, and assumes a much more placid demeanour as it meanders gently under the tall palm-trees. The smoothness of the water, and the shade from the heat of the tropic sun, invite us to get into the punt waiting at the bank, and drift lazily down the stream for a while, and revel in the glorious wealth of vegetation and foliage which adorns the banks. As the punt bears us dreamily along, on our lotus-like sail, we notice the great affection which the cocoa-nut palm has for the water. Its roots are very often half in the land and half in the water, and it does not seem to matter much whether the water is fresh or salt, for I have often seen them grow by the sea in like manner. The tree had grown for some length into the water before it turned upwards into the light and air. Let us now leave the river, and enter Spanish Town, the former capital of the Spaniards.

Perhaps the most striking object in Spanish Town to-day is the Rodney Temple, as it is called. It was erected in honour of the British Admiral, Lord Rodney, and his great victory over the French Fleet, off Domenica, on the 12th of April, 1782. The object of the French Admiral, Count de Grasse, was to capture Jamaica, and drive the English out of the West Indies. Rodney sailed from St. Lucia to intercept the French. In number of ships the fleets were equal, but in size, in armament, and in number of men the French were immensely superior. Rodney led in person on his flagship, the "Formidable." All day long the cannon roared, and one by one the French ships struck their flags or sank. The killed were reckoned at 14,000. At length, after a desperate fight, De Grasse gave up his sword to Rodney on the quarter-deck of the "Formidable." Thus, on that memorable day, were both Jamaica and the British Empire saved! Rodney received a peerage, and is naturally regarded as the great hero of Jamaica.

The temple consists of a semi-circular colonnade, with a central cupola, within which is a marble statue of Rodney, executed by John Bacon, at a cost of £3,000.

Another interesting building is the quaint Cathedral Church. This church is believed to stand on the foundations of the Spanish Church of the Red Cross, which was destroyed by Cromwell's Puritan soldiers, when the town was captured by Venables, in May, 1655. The interior of this quaint and interesting Cathedral Church—and it is nearly 200 years old—is characterised by great simplicity and absence of superfluous ornamentation. In plan the church is in the form of a Latin cross. The side chapels, or aisles, are occupied by several interesting monuments. One of them is the beautiful and pathetic monument to the memory of Elizabeth Mary, the Countess of James Earl of Elgin and Kincardine, who was Governor of Jamaica sixty years ago. This poor lady was married when she was twenty years of age; the following year she came to Jamaica with her husband, when he took up the Governorship. She only occupied her exalted position for a year and two months, for she died the next year, on the 7th June, 1843, a girl still, of only twenty-two. This beautiful monument was erected by the Jamaican Legislature as an expression of the public regard for her virtue and talents.

No doubt you will all have read in your younger days that book of adventure called "Tom Cringle's Log," and how Tom describes a ceiba, or silk-cotton tree, of great size, with a trunk twenty feet through of solid timber, overhanging this road from Spanish Town to Kingston, and into the branches of which he climbed in order to enjoy the luxury of a real Havanna cigar without interruption. We saw Tom Cringle's tree, and a splendid tree it was. (See Fig. 6.) The fruit contains a soft, silky fibre, hence the name. The timber is of no value, except that, as we have seen, canoes are shaped out of it. The natives believe that these great silk-cotton trees are occupied by the Jumbi, or evil spirits, and that it is most unlucky to injure, or throw stones at, one of these trees.

An afternoon's drive brings us from Spanish Town back to

Kingsion, and to our ship homeward bound, and also in time to see a glorious tropical sunset.

You remember that we have been driving all this time in the three-horse van, which we chartered at Mandeville, and we have now travelled in it upwards of 350 miles.

Let me conclude by quoting a few lines as given by Sir Sibbald Scott :—

Beautiful island! where the green
Which nature wears was never seen
'Neath zone of Europe; where the hue
Of sea and heaven is such a blue
As England dreams not; where the night
Is all irradiate with the light
Of stars like moons, which, hung on high,
Breathe and quiver in the sky.
Each its silver haze divine
Flinging in a radiant line,
O'er gorgeous flower and mighty tree
On the soft and shadowy sea!
Beautiful island! brief the time
I dwelt beneath your awful clime;
Yet oft I see in noon-day dream
Your glorious stars with lunar beam;
And oft before my sight arise
Your sky-like seas, your sea-like skies;
Your green bananas' giant leaves;
Your golden canes in arrowy sheaves;
Your palms which never die, but stand
Immortal sea-marks on the strand,—
Their feathery tufts, like plumage rare;
Their stems so high, so strange and fair!
Yea! while the breeze of England now
Flings rose-scents on my aching brow,
I think a moment I inhale
Again the breath of tropic gale.

THE RHINE AND ITS LEGENDS.

By A. C. MAGIAN, M.D., F.R.G.S.

[Addressed to the Society in the Geographical Hall, on Tue-day, October 30th, 1906, at 7-30 p.m.]

N.B.—In this report the legends are omitted.

THERE is to everyone, I think, something interesting and romantic about this mighty river of Central Europe. And we all know that even before the Middle Ages, before William the Conqueror came to England, the Rhine was the chief channel for the interchange of goods between Germany and Britain. The shipping trade of the Rhine was of the greatest importance when the Romans held power, and before this period, and, as far back as history can take us, the Rhine was one of the great rivers of the world. The history of the Rhine is the history of Europe. The Romans and the Franks guarded this great waterway and levied tolls on all ships using it. Later, princes, barons, and knights held their sway over portions of its course, and by imposing at the point of the sword very heavy taxes upon the merchants and traders accumulated vast wealth.

The total length of the river is, roughly, 960 miles. It rises in Switzerland by the confluence of the Vorder and Hinter Rhein. Immediately below this the Rhine is navigable for small craft, but it is, generally speaking, not of much importance until Basle is reached. Here it turns directly north and flows through the beautiful Valley of the Rhine—the so-called "Garden of Germany." Then at Mayence the River Main joins it, and the streams flow north-west and west as far as Bonn. This portion is surrounded by especially delightful scenery. The swiftly-flowing, winding river is guarded on either side by rocky crags and vine-clad hills; mighty fortresses and ruined castles tell more plainly than words can describe or pictures paint of the glories of the bygone ages and of the might of the Fatherland to-day. Great cities and quiet hamlets join hands, as it were, along its banks, to show how all-important is this famous waterway to the Empire. And on the bosom of the river itself are passing and re-passing pleasure steamer and straining tug, light yacht and heavily-laden cargo boat, swift launch and labouring ferry, great drifting rafts and dainty shallops—commerce and pleasure, industry and idleness—the mysteries of life and love. Although this is the deepest and widest part of the river, navigation has to be conducted with care, for shifting sandbanks, half-concealed islands, and submerged rocks would bring speedy disaster to the incompetent or the stranger.

From Bonn to Cologne the beautiful scenery continues, and then we pass the German frontier and find that the ever-broadening stream is now alone of interest to the tourist. The country becomes flat and uninteresting, and finally the great river splits up into a number of small streams, and, as the Waal, Yssel, Leek, and Vecht, pours itself into the deep waters of the North Sea.

So much then, for the course of the river. In addition, one must remember that the Rhine is connected by canals with Central and Southern France, and also with the basin of the Danube and the Mediterranean. Since the year 1870 the river has been free to all, whilst in the eighteenth century the river dues amounted to no less than £200,000 annually.

Leaving Manchester in the afternoon, we take train to Harwich, and there in the evening board the waiting steamer for Rotterdam, where we arrive in the early morning.

Rotterdam is the chief port of the whole Rhine basin, and forms the true mouth of the Rhine. It has some five or six thousand merchant ships touching there, two-thirds of which sail under the British flag. Here was born the great and witty scholar, Gerard Gerard, commonly known as Erasmus. Up the middle of each street runs a capital canal. Canals in Holland are as numerous as streets in England. The rivers are joined to each other by nature and by canals: canals are joined by other canals and by ditches. The windmills, so plentifully scattered along the sides of the rivers and canals, are used for wood-sawing, draining land, grinding corn, bruising oil seeds, mashing paper pulp, and cleaning flax.

Holland is a very cold country, hence the rivers and canals freeze readily in winter and skating is more common than walking in this season. Cows may frequently be seen in the fields wearing overcoats. Holland is steadily swept over by strong winds, hence it is not as unhealthy as such a low-lying country would otherwise be. The exhalations from the marshes and pools are blown away and valuable power is given to the windmills.

Dordrecht, about twelve miles from Rotterdam, is an example of an old Dutch town. To this place large rafts of wood are floated all the way from Switzerland and various parts of Germany. Sawmills, shipbuilding yards, and factories are seen on every side. Here was held the famous synod which condemned the doctrines of Arminius (1618-19), and here was arranged the first National Assembly after the expulsion of the Spaniards (1572). Here also was born, in 1795, the famous French romantic painter, Ary Scheffer. Scheffer exhibited in the Salon in Amsterdam when only twelve years of age. He worked under Guérin in Paris, and painted "La veuve du soldat," "La soeur de Charité," "Faust," "Mignon," "Paolo et Francesca," "Dante et Beatrice," "Le Christ Consolateur," and others. Ary Scheffer has been called the poet-painter on account of the pensive, mystic feeling which dominates his work. A statue to his memory was erected in Dordrecht in 1862.

From Dordrecht to Goch, and so on to Wesel-on-the-Rhine, and then without a break to Düsseldorf. We are now passing through the coalfields of Prussia, through the Lancashire of the German Empire, where town joins town and a veritable network of railways cover the country. We have passed Crefeld, Essen, Elberfeld, and Barmen.

Düsseldorf-on-the-Rhine is the centre of the industrial and populous part of Rheinisch Prussia that we have just referred to. Cotton, silk, woollen, and hardware are its chief manufactures. This ancient city, formerly a little riverside village, was made famous by its Elector,

Wilhelm (whose statue stands in the Market Place), about the year 1700. He extended the city and founded the art reputation of Düsseldorf. He gathered around him famous artists; he bought costly pictures lavishly, and employed skilled artists to copy for him all the celebrated statues, groups, and reliefs which were known in Italy. His successors, unfortunately, took no interest in the collection, and eventually during the complicated affairs of war it fell into the hands of France, and, last of all, was given back again to Germany, but not to Düsseldorf. It was placed in the Pinakothek at Munich! By the treaty of November 23rd, 1870, the magnificent creation of Jan Wellem—the backbone of Düsseldorf's School of Art—was for ever given to Munich. As compensation, a sum of money for the purpose of constructing an Art Hall (Kunsthalle) in Düsseldorf was granted by the State. Düsseldorf is noted for the excellence of its music and theatre as well as art. Immerman, Mendelssohn, Schumann, were all local men of fame. Heine was born here. The Apollotheater, in the Königsallee, is the largest and most beautiful theatre in Germany, and will accommodate 3,000 people. Beautiful parks, splendid museums, magnificent monuments, and interesting relics make the city of Düsseldorf one of the most famous in Germany.

And now we come to the grand old city of Cologne. Cologne—or Köln, as it should be called—is situated on the left bank of the Rhine, twenty-four miles south of Düsseldorf. It is, first of all, a strongly-fortified town, and also one of the first commercial centres of the Empire. It is enclosed in a ring of twenty-two forts, and is the capital of the Rhineland province.

The interesting sights of the town are: (1) The renowned Cathedral, or Dom Kirche. (2) Church of St. Peter, which contains Rubens' "Crucifixion of St. Peter." (3) Church of St. Ursula, where are to be found the bones of 11,000 virgins who were massacred by the Huns on refusing to break their vows of chastity. (4) Church of the Minorities, with the tomb of Duns Scotus, one of the greatest of schoolmen. He died of apoplexy here in 1308. He taught first at Oxford, then at Paris, and finally founded a University in Cologne. (5) Church of St. Marie-im-Capitol, the oldest church in Köln, built in the eleventh century, and which owes its name to the story that the old Roman Capitol once stood there. The oldest part of the church dates from 696. (6) The beautiful Apostel-Kirche, a pure Romanesque building of striking appearance.

Splendid gardens and promenades are to be found outside the old walls.

Cologne is world-famous for its cloth industries, and for its manufacture of "Eau-de-Cologne," of which nearly 2,000,000 bottles are exported yearly. There are more than twenty-four large factories devoted to the production of the well-known scent.

The population of Cologne is now about 450,000, its commerce is most thriving, and it is the central point of all the industries of the Rhine.

The city of Cologne was well-known long before the birth of Christ. It was raised to the dignity of a Roman colony in the year 50. The town even to-day abounds with Roman remains, which are constantly being discovered.

Cologne became more famous than ever when, in 1164, the remains of the "Three Magi" were deposited in the Cathedral.

In 1500 the town began to decline in prosperity, owing to the discovery of America (1492), and in 1800 one-third of the people were on the verge of starvation, living almost like cattle.

The French, during their invasion of 1794 estimated the entire value of the town, with its 150 churches and 8,000 houses, as exactly £1,000,000 sterling. They used its churches for stables, and the majority of the houses were considered unfit for human habitation, being simply filthy dens. In 1880 the mighty ramparts of the city were taken down and the town allowed to expand itself.

Leaving Cologne by steamer, we arrive, after 2½ hours' pleasant sailing, in view of the old University town of Bonn. We pass under a fine bridge, the central span of which is 610 ft. wide—the second largest span of any bridge in Europe.

On the opposite bank to that on which Bonn is built is the little town of Beul, against whose inhabitants the people of Bonn have had in past times much hatred on account of their close-fisted conduct at the time of the construction of the bridge, which connects the two places over the river.

Bonn possesses a fine cathedral with five towers, dedicated to St. Martin. The central tower is 310 ft. high, and in front of the organ is a statue of St. Helena, the mother of Constantine, the Roman Emperor, and a woman of great power in the Christian Church of Europe.

Bonn has of late become a favourite resort for English people. The streets and public buildings are in general very attractive and handsome, and, although an ancient town, it has a very modern appearance. There is a splendid University, beautifully situated, with 1,300 students and 140 professors. The late Prince Consort studied here for some time. In a house—No. 7, Rheingasse—the great composer-musician, Beethoven, was born, and in the Munster Platz is a bronze statue erected to his memory. This was unveiled in the presence of Queen Victoria in 1845.

Leaving Bonn, we proceed south again to visit Königswinter and the Siebengebirge (Seven Mountains) with the Drachenfels. We may travel by train to save time, or go by steamer if we prefer. Formerly, before the bridge across the river was built, a ferry was used to transport the whole train and passengers to Beul on the opposite bank. Now this method of crossing the river has naturally gone out of use. The Rhine at Bonn is wider by 100 yards than at Cologne, and measures about 532 yards across—nearly one-third of a mile.

Just a word about the river steamers. The first steamboat which sailed the Rhine was an English one in 1816. Ten years later a German firm started a regular service of boats between Cologne and Mainz. Other companies joined, and to-day the Köln-Düsseldorfer Rhein Dampfschiffahrt (Cologne-Düsseldorf Rhine Steamship Company) has more than thirty first-class steamers in full use on the river. The large double-deck steamers carry 1,500 passengers each, are 270 ft. long, 55 ft. across the paddle boxes, and are the largest, fastest, and finest saloon river steamers in Europe. They carry nearly two million passengers yearly and 40,000 tons of

cargo. There is every accommodation for dining on board, and also every convenience as regards comfort.

And now the Seven Mountains and the stony Drachenfels come into view. The Seven Mountains consist of various peaks and cones, one of which is known as the Drachenfels. At the summit towers the castle of Drachenfels, at the height of about 1,000 ft.

“The castled crag of Drachenfels
Frowns o’er the wide and winding Rhine,
Whose breast of waters broadly swells
Between the banks which bear the vine;
And hills all rich with blossomed trees,
And fields which promise corn and wine,
And scattered cities crowning these,
Whose far white walls along them shine,
Have strew’d a scene which I would see
With double joy wert thou with me.”

Facing the Drachenfels, on the opposite side of the river, is the ruin of Rolandseck, indicating the spot where the famous Knight Roland, nephew of the Frankish King, wooed and lost his bride. It was here also that the great Paladin died.

And now to Andernach. This is a quaint little town, very ancient and picturesque. Formerly the *Antunacum* of the Romans, one of the fifty forts of Drusus the great general who subjugated all the leading German tribes and, at the expense of fearful bloodshed, established the supremacy of Rome. The town was in old days the residence of the Merovingian kings. There is a fine old church, with four towers, built in 1206. An ancient watch tower still stands prominently by the riverside, and the city is still surrounded by ancient walls and ramparts.

Neuwied, with its Moravian commune, is passed, and then comes Coblenz, a famous city about halfway between Cologne and Mainz, and one of the most important military strongholds in Germany. The beautiful Rhine promenade is probably the finest in Germany. The Rhine province monument to Kaiser Wilhelm on the *Deutsches Eck* was unveiled in 1897. It stands on a broad base supported by twenty granite pillars, each 33 ft. high. The statue is 46 ft. high, and is cast in copper. The whole is enclosed in a pergola 124 ft. long, and on the face of the monument is engraved: “*Nimmer wird das Reich zerstöret wenn ihr einig seid und tren*” (Never shall the Empire perish if ye remain true and united). It cost £100,000. Among the various churches in the town, one of the most interesting is the ancient Church of the Jesuits. The town is irregularly built, but the newer parts are well laid out with broad, clean streets and fine buildings.

The river may be crossed by the boat bridge or the newer stone and iron one. On the opposite side lies the famous fortress of Ehrenbreitstein, often called the Gibraltar of the Rhine. The fortress is built on the solid rock, inaccessible on three sides, and nearly 400 ft. above the river. Even as far back as the fifteenth century it was of such importance that the commander had to swear allegiance to the Emperor as well as to the local ruler. In 636 it was given to the Archbishop of Treves by the King of the Franks. To-day there is

a triple line of defences mounted with 400 formidable guns. On the top of the rock is a parade-ground and water tanks holding a water supply sufficient for three years. The French conquered it by famine in 1799 and blew it up in 1801. To-day it is one of the strongest fortresses in the world. It is a marvel of engineering skill.

From Coblenz we go to Capellen and visit the magnificent castle of Stolzenfels. Formerly the residence of the Archbishop of Treves, this famous castle is now a Royal residence. Built in 1242, it was destroyed by the French in 1689, given to the German Crown Prince in 1833, renovated at a cost of £50,000, and visited by Queen Victoria, as guest of the German Emperor, only a few years ago.

Opposite Capellen lies the old town of Oberlahnstein, surrounded by walls, towers, and fosses—the remains of the glories of long ago. Close to Oberlahnstein, on the other side of the River Lahn, is the Castle of Lahneck, where in the old days the last of the Knights Templars fought for their lives, shouting their old war-cry: “*Sans peur et sans reproche!*” Of such castles it is well said—

“ They stand as stands a lofty mind,
Worn but unstooping to the baser crowd,
All tenantless save to the crannying wind,
Or holding dark communion with the cloud.
There was a day when they were young and proud,
Banner on high, and battles passed below!
But they who fought are in a bloody shroud,
And those which waved are shredless dust ere now,
And the bleak battlements shall bear no future blow.”

We pass on, pausing at Braubach to view the fine old Castle of Marksburg—the sole survivor of the wars of the Middle Ages—and again at Boppard to learn the legend of the Convent of Marienburg.

Next we see the picturesque ruins of the castles of Sterrenburg and Liebenstein, separated by a stout defensive wall. The legends of the twin brethren and their love for the fair Angela are vividly recalled to mind on viewing the old battlements as they frown over the silent river.

And so on to St. Goar and St. Goarhausen, with the Castle of the Cat and the ruin of the Rheinfels—the famous fortress which withstood the combined forces of sixty Rhine cities for 15½ months and was at last sold, after being blown up in 1791, for the paltry sum of £100. At St. Goar every stranger was forced to drink a goblet of wine to the memory of the great Karl, the Sovereign of England, the ruling prince, and the local club, or else be ducked in the river. History records no cases of the ducking process!

Soon after leaving St. Goar we approach the celebrated rock known as the Lorelei, where sits, according to the legend, a golden-haired maiden who lures the unwary mariner to his doom by her glorious voice and ravishing beauty.

“ Subtly stealing, floating like incense
Over the golden-lit, swift-flowing Rhine,
Come to the ears of the ill-fated mariner
Strains so enchanting, thrilling the listener,
Luring him, drawing him, reckless of danger,
On to the rocks where the cruel lights shine.”

Our onward course brings us now to Caub and the Castle of Gutenfels, where Prince Richard of Cornwall, as a stranger knight, fought against the picked knights of Europe, and, as victor, wooed and won the beautiful Countess Guta, sister of Count Philip of Falkenstein. Of more recent date is the historic "Pfalz," situate in the middle of the river and formerly a Royal residence. It was here in 1814 that Blucher and his army crossed the Rhine, and at Caub a magnificent statue has been erected to his memory.

Bacarach next claims our attention, and here we see the ruined Chapel of St. Werner and the fine old Church of St. Peter. The chapel was erected in 1293, to the memory of a murdered Christian boy, whose body is said to have miraculously floated *up* stream and come ashore here.

And now we are in the centre of the Rheingau—the celebrated wine district of the Empire. We pay a flying visit to Bingen—"Fair Bingen-on-the-Rhine"—and gaze from the shore at the little island in mid-stream, where stands the old "Mouse Tower," in which the cruel Bishop Hatto is said to have been eaten alive by a swarm of mice—torn to pieces and devoured piecemeal by the ravenous animals, as a judgment from Heaven for his wickedness. In the distance stands out clearly from the opposite shore the enormous National Monument of Germany, which took nine years to build, and which was erected "to commemorate the victorious and unanimous rising of the German people and the restoration of the German Empire in 1870-71."

Aboard ship again and on to Mayence, the golden city of the Rhine, founded by Drusus thirty-eight years before the birth of Christ, and famous throughout the ages for freedom and song. Here it was that Rhenish cities established their independence, that Gutenberg first put together type for printing books, and that the great trade of the Rheingau originated. The name "Golden Mainz" was given to it ages ago on account of its prosperity.

Close to Mayence is Wiesbaden, the beautiful and fashionable "city of millionaires." It has become famous by reason of its mineral springs and baths, some twenty-two of which are to be found in different parts of the town. More than 60,000 visitors come here annually. It is a remarkably beautiful place, and full of magnificent buildings. The Greek Church is a most costly and imposing edifice, built on the hillside, entirely of marble, and decorated with gold and precious stones. It was erected by the Duke of Nassau, as a mausoleum for his girl-wife, Elizabeth, who died here. The Kursaal, Trinkhalle, and other municipal buildings are most interesting.

Forty miles south-east of Mayence lies the old-world city of Worms. Known to the ancient Romans, it was destroyed by Attila and rebuilt by Lodwig. It has many times been the seat of pitched battles, but is perhaps most interesting through its connection with Martin Luther. A monument to the reformer is one of the sights of the town.

And now to dear old Heidelberg, with its famous castle and its equally famous University. The castle was for 500 years a Royal residence. In one of its cellars rests an enormous wine cask, the "Heidelberg tun," which, according to Mark Twain, "is as big as a cottage, and by tradition contains either 1,800,000 bottles or 1,800,000 million barrels—one of these statements is a mistake and

the other a lie!" The University was founded 550 years ago, and has over 1,000 students. The students' "duelling inn" is a particularly interesting establishment, and one always visited by strangers.

Still onward, and we glide slowly past Basle, and Rheinfelden and Säckingen are reached by train. The Falls of Schaffhausen next delight the eye and soothe the wanderer's travel-weary mind, and here he may well stop, to rest for a moment and to bid the grand old river a lingering good-bye.

"O Rhine, well may the German heart glow proudly at thy name,
Well may the German love to tell the stories of thy fame,
To paint thy ancient castles and to praise the glorious vine
That wins its bloom and fragrance on those sunny banks of thine
Here 'mid thy fairest, gentler scenes, thy vales of velvet green,
With little hamlets gleaming like loose pearls that lie between;
With spires and convents rising from a purple line of hills,
With the sound of tinkling vespers and of tiny trickling rills,
Where but in Rhineland can we find a counterpart of these?"

"Adieu to thee, fair Rhine! How long delighted
The stranger fain would linger on his way.
Adieu to thee again, adieu!"

NEW MAP.

NEW OROGRAPHICAL MAP OF ASIA. Compiled under the direction of H. J. Mackinder, M.A. Scale, 1/8,721,500, or 137.6 miles to an inch. In four sheets, 58 by 50 inches. London: E. Stanford 1906.

THE map of Asia, by E. Stanford, contains many new and good features, and is a further illustration of the advance taking place in the method of representing the physical features of a country.

The different heights of the land above sea level are represented by varying shades of brown, while the depths of oceans and seas are shown in shades of blue. These shades stand out in great contrast, and make it possible to compare the great irregularities of heights and depths with interest and success. With a brief consideration of the shadings and the values they represent, a very vivid impression of the general physical features of the continent is obtained.

The new features introduced and explained, on a leaflet issued with the map, will increase its usefulness from a teaching point of view. It is a good map, clear, bold and attractive, and worthy a place in any school.

H. C. M.

CORRESPONDENCE.

AFRICAN LANGUAGES.

SIR,—The importance of language in relation to political and social aspects of the native question in Africa seems liable to be overlooked. The possibility of large groups of tribes, hitherto distinct and mutually antagonistic, becoming rapidly able and eager to understand each other in some common form of speech has apparently to be taken into account. Twenty-six years' contact with Swahili and various dialects of Eastern and Central Africa points so far to the conclusion that there is a remarkable degree of similarity, amounting in many important respects to substantial identity, in the grammatical structure of language over the whole vast area occupied by the Bantu races of Africa, from the Soudan to the Cape. And the stock of words common to all Bantu tribes, when recognised under their various dialectic disguises, will probably prove very considerable.

The officials, missionaries, traders, settlers, and travellers of various nationalities who are qualified to give help in testing this conclusion by personal and first-hand study of a Bantu dialect are naturally difficult to reach—scattered in remote and often isolated spheres of work. It is, therefore, perhaps justifiable to ask publicity for the request, that persons so qualified and willing to accept and reply to a brief communication on the subject would send me their addresses at Fort Jameson, North-Eastern Rhodesia.

I should be grateful if foreign journals and local papers in Africa, general and official, would assist by calling attention to my invitation.

I am, etc.,

(Signed), A. C. MADAN,

Student of Christ Church, Oxford.

c/o The British South African Co.,

Fort Jameson, North-Eastern Rhodesia.

12th July, 1906.

Government University, Tai Yuan Fu, Shansi,

North China, August 30th, 1906.

MY DEAR MR. SOWERBUTTS,—I am very sorry to have to say that our Principal, Dr. Moir Duncan, has just died, at the early age of forty-five. He was a man of wonderful energy, and the way he could work from early morning to late at night often excited our wonder and admiration.

Alas! he was really overworking himself, and the breakdown when it came was of such a nature as to admit of no hope of recovery. He is buried on a mountain top about thirty miles away, at a place where he had gone to try and recuperate. I have paid a very short visit to Wu Tai Shan, and once more found it very interesting. The fair was just over, and most of the Mongol horse dealers had returned home; but there were a good number of pilgrims, several of whom had come from Tibet.

According to the chief priest of the temple at which we stayed, the first temple was built there in the Chou Dynasty by some Indian pilgrims, who were carrying the ashes of some famous Buddhist saint whom he called Shih Chia Foa Yie.

Poa Yie is a title applied to Buddha, so I expect Shih Chia was one of his disciples.

The district magistrate was paying a visit to the place, and stayed in the same temple. He was very kind to us, and seemed to be an intelligent man when not under the influence of opium; but he seemed to occupy about half of the time he ought to have given to business in smoking. He did not disguise his failing, and his pipes and lamp were to be seen in his guest-room.

I hope to send you a communication of some kind before long, and hope I may find something that will interest you.

Although it is rather early to mention it, yet I should be glad if you would once more allow me to present the cake at the Children's Party.

Up to the present over 80 of our students have been granted the Chü Jen or M.A. degree by the Peking authorities, and the district is pleased with congratulations to the students from admiring friends.

We hope to start the advanced courses with about 80 men, and when they have finished they will have had seven years with us.

With best wishes to Mrs. Sowerbutts and all the friends of the Society,

I remain, yours very truly.

R. W. SWALLOW.

C.M.S. Hoima, Uganda Protectorate,

East Africa, December 31st, 1905.

DEAR SIR,—I am most grateful to your Committee for letting me see Mr. Hill's letter to the *Manchester Guardian* on the supposed famine in Uganda.

I must say it was the very first intimation I have had of Mr. Hill's visit or the famine. I am at a complete loss to understand how Mr. Hill could have formed such an idea, for the rainfall has been the best and most regular that the country has enjoyed for many years; the soil everywhere is richly productive, and with the least amount of labour any peasant can provide himself and his family with food.

The universal custom is for the natives along the main roads to plead hunger so as to excuse the small supply produced, and as much as possible to save their gardens from the numerous passing caravans. For the last fourteen years itinerating through the Kingdom of Uganda and other parts of the Protectorate, I have become familiar with the expression quoted by Mr. Hill, "Hunger has fallen down," and I venture to express an opinion, that if Mr. Hill had visited the home of any one of these "noontide ghosts" he would have seen gardens of plantains, sweet potatoes, Indian corn, millet, and a herd of goats and sheep. I have circumstantial evidence to prove that food is now so plentiful in Toro that it commands practically no market value.

The Ankole people live chiefly on the produce of their thousands of cattle, and only within recent years, under Government pressure, have they commenced to cultivate the soil to any extent, hence food for passing caravans is sometimes scarce; but if due notice is given to the district chief he is able to procure food from the distant gardens, where the pressure is not so great as that which falls on the few gardens near the main road.

I feel sure that if Mr. Hill had taken the Missionaries or the Government Officials into his confidence they would have put his mind at rest with regard to the true condition of things.

Believe me, dear sir,

Very sincerely yours,

ARTHUR B. FISHER.

P.S.—I heartily congratulate the Committee on the opening of their new premises, and the splendid session programme.

PROCEEDINGS OF THE SOCIETY.

JULY 1ST TO DECEMBER 31ST, 1906.

The meetings are held in the Geographical Hall, unless otherwise stated.

The 728th Meeting of the Society was held at Marple, on Saturday, July 7th, 1906.

The members were met at Marple Station by Mr. JOEL WAINWRIGHT, J.P., and conducted by him past Samuel Oldknow's Market Place (of which he gave an interesting account), along some of Oldknow's roads, past the house in which Samuel Oldknow lived and died, and through the charming garden adjoining the lake, which has recently been opened for boating. The prospect from the pavilion connected with the lake is charming, and on a clear day Werneth Low may be seen in the distance. Mr. Wainwright afterwards led the party through Marple Bridge to his delightful residence, "Finchwood," on the hillside. The host and the ladies of the house entertained the party to tea. After full justice had been done to the good things provided, Mr. J. HOWARD REED moved, and Mr. E. SCHOFIELD, J.P., seconded, a resolution that the hearty thanks of those present be tendered to Mr. Wainwright and his ladies for their kindness. Mr. N. BRADLEY, J.P., supported the resolution and put it to the meeting, when it was carried unanimously and with acclamation. Mr. WAINWRIGHT, in a few choice words, responded to the resolution.

In the garden of Finchwood, after tea, Mr. REED kindly gave an account of the proceedings of the Conference of Delegates of the British Association for the Advancement of Science, held in London last October, at which he represented the Society.

Mr. REED spoke as follows:—

A few days ago I received a letter from Mr. Joel Wainwright, J.P., dated July 1st, 1906, in which he said: "I do wish you could give a little Geographical talk on some of your favourite subjects next Saturday afternoon." It occurred to me that I could not do better, in response to this request, than give a short report of the Conference of Delegates which I attended on behalf of the Society, and which was held in London, at Burlington House, on October 30th and 31st, 1905, and recount some of my doings on that occasion. I fear it will be difficult to do more than refer very briefly to the proceedings in the time which your patience will allow to me on this beautiful summer evening, and in the midst of these lovely and hospitable surroundings. The two days' conference was presided over by A. Smith Woodward, Esq., F.R.S., the Chairman of the Corresponding Societies Committee, and he opened the proceedings by a most suggestive address. During the two days valuable and instructive papers were read on "The Preservation of our Native Plants," by Professor G. S. Boulger; "The Law of Treasure Trove," by Dr. W. Martin; and "The Question of

Copyright as Affecting Scientific Societies," by Mr. M. Walton Brown. Useful and interesting discussions followed the reading of each of these papers. For further particulars of these papers I must refer you to the Annual Report of the British Association. On the afternoon of the first day of the Conference the delegates visited, by invitation, the Museum of the Royal College of Surgeons. This was a most interesting and well-pent afternoon. Our party was conducted through the Museum by the Curator, Professor Stewart, who drew attention to some of the more interesting treasures, and in racy terms told us many interesting facts with regard to them. Among the large collection of skeletons possessed by the Museum were seen those of the notorious Jonathan Wild, the Bow Street runner, and the celebrated Yorkshire Giant. An unwrapped Egyptian mummy was shown us, and our guide explained that the material in which it was wrapped was found on examination to be very much finer than the finest cambric which could be purchased in a Bond Street draper's shop to-day, showing what a high condition of excellence of workmanship was applied in the manufacture of the fabrics of ancient times. It is impossible to refer in any detail to the wonderful things we were shown that afternoon, but all those present were agreed that the time had been extremely well spent, and that the experience gained was of a most valuable and enlightening character. On the evening of the same day the delegates were, by special invitation, entertained to dinner at the Royal Societies Club. The hospitality of our hosts was of a hearty and even lavish description. We were regaled with good fare, and the company we met was of the most pleasing and enjoyable kind. I was well engaged during the dinner in discussing South Africa, and its geography, with a clergyman who had just returned from the sub-continent, where he had been with the British Association. Among other well-known geographers, I met that evening our good friends Dr. Scott Keltie, Dr. Mill, and our own member, Dr. Black, of Edinburgh. In the afternoon of the second day of the Conference the delegates attended the meeting of the General Committee of the British Association, of which each delegate is a member. Various business matters connected with the Association were discussed and settled at this meeting, most of which were of an interesting nature. Professor G. H. Darwin (now Sir George Darwin) President of the Association for the year, took the chair at this meeting, and I was specially struck with his very courteous and kindly bearing to all, by the charm of his manner and voice, and for the great ability and tact he displayed in dealing with matters which in less able hands might have led to some amount of friction. In the room where we were sitting was a large portrait of the great Charles Darwin, and I tried to discover some points of resemblance between the distinguished father and little less distinguished son who was presiding over our deliberations. Besides the election of officers, the business of the afternoon included the fixing of the date of the 1906 meeting, to be held at York, and the arrangement of the place of meeting for the year 1907. In connection with the last-named matter strong deputations attended from the cities of Leicester and Dublin, each to press the special claims of the place they represented. Each deputation was specially representative of the civic, commercial, scientific, and educational life of the two cities, and showed at once that both Leicester and Dublin were thoroughly in earnest in the cordial invitations which they gave to the members of the British Association. The

deputations came into our meeting separately, and several gentlemen spoke both strongly and eloquently in pressing the claims of their respective cities. These speeches were evidently in most cases carefully prepared, and each, taken by itself seemed sufficient to prove that no other place was for the moment worthy to be considered in preference to that from which the speaker hailed. After each deputation in turn had eloquently urged its claims and had withdrawn, the Committee discussed the matter, and in due course came to a decision. This was that in view of a previous disappointment on the part of Leicester, and for other reasons, the Association should visit the English midland city in 1907, trusting that Dublin would renew its invitation at some future time, and would not feel hurt that Leicester was to have the preference on that occasion. The President left the room and visited each deputation, and explained the decision of the Committee, and there is little doubt that his natural urbanity and tact stood him in good stead when he had to explain matters to the men from Dublin. He returned to tell us that the Leicester deputation was delighted, while that from Dublin was disappointed, though they gracefully accepted the situation. It was whispered among the members of the Committee afterwards that some of the gentlemen from Dublin regarded the decision as "another injustice to Ireland." The close of the Committee meeting just referred to brought the Delegates' Conference to a close. Your delegate was pleased and proud to represent this Society at the two days' function, and trusts that this report, brief and incomplete though it be, may be considered acceptable, and a satisfactory record of his doing on your behalf at the meeting of the Corresponding Societies of the British Association of 1905.

On the motion of Mr. WAINWRIGHT, a vote of thanks was unanimously passed to Mr. Reed for his very interesting report, and Mr. Reed's acknowledgment concluded the proceedings.

The 729th Meeting of the Society was held at the Holiday Home, Great Hucklow, on Saturday, July 21st, 1906.

The members arrived at Miller's Dale about 2 p.m., and drove, under the leadership of Mr. DAVID A. LITTLE, through Tideswell to Great Hucklow. The chief objects of interest passed on the way were pointed out. The Holiday Home at Great Hucklow was inspected with interest. A full account of the Home has already appeared in the *Journal* (Vol. XVII., page 194), so further description is unnecessary. The members ascended Hucklow Edge, which rises behind the village and is well wooded. A splendid view was obtained towards Tideswell in the south-west and Bretton Clough, etc., in the north-east.

After tea, to which full justice had been done, Mr. W. JACKSON moved, and Mr. A. BALMFORTH seconded, a hearty vote of thanks to Mr. Little for his kindness and generosity, and it was carried with acclamation. Mr. LITTLE made a suitable response.

Mr. LITTLE led the party back to Tideswell, and a very interesting visit was made to the old Church, appropriately called "the Cathedral of the Peak," as it certainly seems too large for the village of Tideswell. Several hours could very well be occupied by a close inspection of the various ancient monuments and brasses to be found in the Church, with

the assistance of the fully illustrated guide compiled by the Rev. J. M. J. Fletcher, vicar of the parish.

The party arrived at the Central Station, Manchester, in good time, and thus happily concluded a very enjoyable visit.

The 730th Meeting of the Society was held on Tuesday, October 2nd, 1906.

Messrs. S. Oppenheim, J.P., D. A. Little, and J. Howard Reed, on behalf of the Council, received the members from 6 p.m., and an inspection of the Museum and Library constituted the first hour's proceedings, light refreshments being served in the Members' Room.

At 7 p.m. Mr. HARRY NUTTALL, M.P., took the chair, and the Minutes of the Meetings held on April 3rd, June 23rd, July 7th, and July 21st were taken as read.

Reference was made to the deaths of Messrs. B. I. Belisha, Adam Murray, and T. Woodhead, and a resolution was passed that the sympathy of the members should be conveyed to their relatives. Mention was made of the fact that the first two were original members.

Mr. JAS. STEPHENSON REID, of Nicholls Hospital, gave a lecture on "Scottish Scenery, Song, and Story," illustrated with a large number of beautiful slides. The proceedings were enlivened by appropriate songs, glees, etc., by the Waverley Quartette Party.

A cordial vote of thanks to Mr. Reid for his interesting address, and to the Waverley Quartette Party for their assistance, was moved by Mr. Alderman WM. NORQUOY, seconded by Mr. J. HOWARD REED, and carried unanimously.

The 731st Meeting of the Society was held on Tuesday, October 9th, 1906. In the chair, Mr. J. HOWARD REED.

The Minutes of the Meeting held on October 2nd, 1906, were taken as read.

The death of Mr. R. Maginnis was announced, and a resolution of sympathy with his relatives was passed.

It was announced that the Society was represented at the funeral of the late Mr. Belisha by the Rev. S. A. Steinthal, F.R.G.S., and Mr. J. B. Dowdall.

The Rev. F. A. REES (Rhysfa) gave a lecture entitled "From Snow-fields to Vineyards." The address was illustrated with original slides.

A vote of thanks was moved by Mr. F. ZIMMERN, seconded by Mr. GEORGE GINGER, and passed unanimously.

The 732nd Meeting of the Society was held on Tuesday, October 16th, 1906, at 7-30 p.m. In the chair, Alderman Sir BOSDIN LEECH, J.P.

The Minutes of the Meeting held on October 9th were taken as read.

Replies to the resolutions of sympathy were read from the relatives of the late Mr. Murray and Mr. Maginnis.

The election of the following members was announced:—

LIFE: Mr. James Brierley, B.A., F.R.G.S.

ORDINARY: Miss Timperley, Mrs. Fairhurst, Messrs. M. G. Hering, Harry Siegler, Fred. A. Jones, Edwin B. Roberts, and C. McDougall Smith.

ASSOCIATE: Miss G. A. Stott.

It was announced that a large number of presentations had been received, including the "Climatological Atlas of India," from His Majesty's Secretary of State for India.

Captain E. W. WAKEFIELD, D.L., J.P., gave a very interesting account of his journey to South Africa with the British Association. The address was illustrated with a large number of lantern slides from photographs taken by the lecturer. The syllabus of the lecture was as follows: Geography, the first and most interesting branch of science—Teneriffe and Grand Canary—Table Bay—Robben Island and the lepers—Simon's Bay—Groote Schuur—East London—Durban—Pietermaritzburg—Battlefields of Colenso and Ladysmith—Pretoria—Gold reefs of the Witwatersrand—Johannesburg and the Chinese—The High Veldt—Bloemfontein—Paardeberg treck and Cronje's laager—Kimberley and its blue ground—Klerksdorp and lava beds—Potchefstroom—Mosquitos and plum pudding—Losberg and Gatsrand—Magalliesberg and the tropics—Rhodesia—Matopos—World's View—Rhodes's grave—Victoria Falls—Zambesi and Livingstone Island.

A cordial vote of thanks to Captain Wakefield was moved by Sir BOSDIN LEECH, seconded by Mr. HERMANN WOOLLEY, F.R.G.S., and carried unanimously.

The 733rd Meeting of the Society was held on Tuesday, October 23rd, 1906, at 7-30 p.m. In the chair, Rev. S. A. STEINTHAL, F.R.G.S.

The Minutes of the Meeting held on October 16th, 1906, were approved.

Mr. J. J. PHELPS gave a lecture, entitled "The Pyrenees and Pyrenean People," which was illustrated with over 100 lantern slides taken by the lecturer.

Mr. F. ZIMMERN moved, Mr. R. C. PHILLIPS seconded, and it was resolved that the sincere thanks of the meeting be given to Mr. Phelps for his interesting address and for the opportunity to see the splendid photographs.

The 734th Meeting of the Society was held on Tuesday, October 30th, 1906, at 7-30 p.m. In the chair, Mr. CHARLES ROEDER.

The Minutes of the Meeting held on October 23rd, 1906, were approved.

The following letter was received from the family of the late Mr. B. I. Belisha in response to the resolution of sympathy passed by the Society:—

"The Brother and Sisters of the late Mr. Barrow I. Belisha tender their sincere thanks for kind sympathy and condolence."

The Chairman announced the election of the following members:—

ORDINARY: Miss Wilde, Mrs. Proctor, Mr. W. H. Reynolds, R.N.R., and Mr. E. H. Silver.

ASSOCIATE: Miss Proctor.

Dr. A. C. MAGIAN, F.R.G.S., addressed the members on "The Rhine and its Legends," illustrated with lantern slides. (See page 135.)

Mr. F. ZIMMERN proposed, Mr. R. BORNMULLER seconded, and it was resolved that the thanks of the meeting be accorded to Dr. Magian for his very interesting lecture.

The 735th Meeting of the Society was held on Tuesday, November 6th, 1906, at 7-30 p.m. In the chair, Rev. S. A. STEINTHAL, F.R.G.S.

The Minutes of the Meeting held on October 30th, 1906, were approved.

Mrs. LOUISE HIRSCH gave an address on "Life in Queensland," illustrated with numerous lantern slides.

Mr. JOHN STIRLING, who had lived in Queenstown, moved, and Mr. G. GINGER seconded, a hearty vote of thanks to Mrs. Hirsch for her very interesting address, and the vote of thanks was passed unanimously.

The 736th Meeting of the Society was held on Tuesday, November 13th, 1906, at 7-30 p.m. In the chair, Mr. J. HOWARD REED.

The Minutes of the Meeting held on November 6th were approved.

The election of Mr. Henry Landon Littler as an ordinary member was announced.

Captain W. J. P. BENSON, F.R.G.S., gave a lecture, entitled "To the Southern Pacific across the Andes." The lecture described a journey from Southampton to Buenos Ayres by way of Vigo, Lisbon, Madeira, Cape Verde Islands, Pernambuco, Bahia, Rio de Janeiro, and Monte Video; from Buenos Ayres through Argentina, across the Andes (over 23,000 ft. above the level of the sea), and through Chile to Valparaiso. The lecture was illustrated with over 100 specially-prepared slides.

Mr. F. A. CORTEZ LEIGH (who has just returned from a similar journey) moved, and Mr. F. ZIMMERN seconded, and it was unanimously resolved, that the best thanks of the meeting be given to Captain Benson for his very interesting address.

The 737th Meeting of the Society was held on Tuesday, November 20th, 1906, at 7-30 p.m. In the chair, the Rev. S. A. STEINTHAL, F.R.G.S.

Mr. J. HOWARD REED, Hon. Secretary, on behalf of the Council and members of the Society, presented an illuminated address to the Chairman in celebration of his 80th birthday. The following is the text of the address:—

MANCHESTER GEOGRAPHICAL SOCIETY.

(President: His Royal Highness the Prince of Wales, K.G.)

16, St. Mary's Parsonage, Manchester,
November 15th, 1906.

To the Rev. S. ALFRED STEINTHAL, F.R.G.S., Vice-President, and
Chairman of the Council.

DEAR SIR,—We, the undersigned, on behalf of the Executive Committee, Council, and members of the Manchester Geographical Society, beg to offer you our cordial congratulations on your having been spared

to celebrate your 80th birthday. We trust that a fair measure of health and strength may be continued to you, so that the later years of a long and well-spent life may be full of satisfaction to yourself and family, and of sustained usefulness to the community.

As members and officials of the Manchester Geographical Society, who have laboured for many years under your able and genial chairmanship, we are well qualified to refer to the great value of the services which you have so ungrudgingly and unceasingly rendered to geographical science, and more especially to this particular Society. We feel that to your devotion, wisdom, and enthusiasm is due much of the success which has attended the operations of the Society during the twenty-two years which have expired since its foundation.

We rejoice that you have been spared to see the Society well established in a permanent home, and we trust that you may be still spared for many years to guide and direct our efforts.

In conclusion, we can assure you that no body of persons can ever have worked together with a more whole-hearted regard for their leader than have the members of this Society. On behalf of all, we beg to subscribe ourselves, in all sincerity,

Yours most faithfully,

(Signed), HARRY NUTTALL, Vice-Chairman,
DAVID A. LITTLE, Hon. Treasurer,
F. ZIMMERN, } Hon. Secretaries,
J. HOWARD REED, }
C. A. CLARKE, Hon. Secretary of Victorians,
HARRY SOWERBUTTS, Assistant Secretary.

Mr. Nuttall, being unable to be present, wrote as follows:—

"I am pleased to hear of the proposal to present an address to Mr. Steinthal on his 80th birthday, in which I shall join most heartily. His services to our Society have been unceasing and have covered many long years, and those labours have been included in the greater and ultimate object—the advancement of geographical science and knowledge in every direction.—Yours faithfully,

"(Signed.) HARRY NUTTALL."

Dr. T. FRANK SOUTHAM, of Bowdon, gave a lecture on "Some South Sea Islands—Reminiscences," illustrated with many lantern slides.

The CHAIRMAN, on behalf of the meeting, cordially thanked Dr. Southam for his interesting lecture.

The 738th Meeting of the Society was held on Tuesday, November 27th, 1906, at 7-30 p.m.

In the unavoidable absence of the Rev. C. A. Killie, who had intended to come and give a lecture about China, the Council had arranged a soirée in order that the members might have an opportunity to see the rooms, and to afford the opportunity for the Chairman to make a statement about the financial position of the Society, and the necessity for a large increase in the membership.

The following was the programme:—

7-30 p.m.: Reception of guests, in the Lecture Hall, by Rev. S. Alfred Steintal, F.R.G.S., the Chairman of the Council. 8-0 p.m.: Piano solo, "Grand Fantasia" (C. Gimble), Miss Lilian C. Heap, A.L.C.M.; song, "Mona" (S. Adams), Mr. A. Howard Reed; song, "Softly wakes my heart" (Saint-Saens), Miss Bessie Blackburn; 'cello, "Andante from Concertstück in D minor" (H. Heberlein), Miss Clara Richardson; song, "The Admiral's Broom" (F. Bevan), Mr. A. Howard Reed; "A Few Remarks on Arabic Music," with illustrations, Mr. R. Cobden Phillips; songs, (a) "Summer Rain," (b) "When the Birds go North" (Willeby), Miss Bessie Blackburn. 8-30 p.m.: Statement *re* the Society's work. 8-45 p.m.: Refreshments in the Members' Room. 9-15 p.m.: Exhibition of Lantern Slides illustrating Life and Scenes on the Congo, with short descriptions by Mr. R. Cobden Phillips. 10-0 p.m.: "God Save the King." Accompanist: Mr. J. Hindle, L.R.A.M.

On the proposition of Mr. Councillor SNADDOX a hearty vote of thanks to the kind friends who had assisted with music and in other ways during the evening was carried unanimously.

The 739th Meeting of the Society was held on Tuesday, December 4th, 1906, at 7-30 p.m. In the chair, Alderman Sir BOSDIN LEECH, J.P.

The Minutes of the Meeting held on November 27th were taken as read.

The Chairman announced the election of Mr. R. Lomas Jones as an ordinary member, and Miss M. L. Ashworth as an associate member.

Mr. E. W. MELLOR, J.P., F.R.G.S., gave a lecture, entitled, "Jamaica, the Crown of our West Indian Possessions." (See page 113.) The lecture was illustrated with original lantern slides.

The CHAIRMAN proposed that the hearty thanks of those present be given to Mr. Mellor for his very interesting address and for the beautiful slides shown, and the motion was carried with applause.

The 740th Meeting of the Society was held on Tuesday, December 11th, 1906, at 7-30 p.m. In the chair, Mr. GEORGE GINGER.

The Minutes of the Meeting held on December 4th were approved.

The Chairman announced the election of the following members:—

ORDINARY: Messrs. J. A. Hailwood, W. L. Crawford, M. Ellinger, R. G. Burton (from Associate).

ASSOCIATE: Miss Agnes Willoughby.

A paper by Mr. C. H. Bellamy, F.R.G.S., on "Fairford Church, the Lantern of England," was read by Mr. J. Howard Reed. The paper was illustrated with some specially-prepared lantern slides.

The Chairman then called on Mr. Joel Wainwright, J.P., who read the following letter to Mr. Reed:—

"DEAR SIR,—In recognition of your great services in so many capacities to the above Society, the members are very desirous to place on record some grateful appreciation, and have thought that your "Silver Wedding" was a suitable opportunity on which to subscribe the necessary fees to make you a

Member and 'Fellow of the Royal Geographical Society,' a position to which your knowledge of Geography fully entitles you.

"We also ask your good wife to accept the silver rose bowl as a souvenir of the occasion, with our best wishes that you may long be spared to help each other.

"It was fully intended by our well-beloved and venerable Chairman, the Rev. S. A. Steinthal, F.R.G.S., that he would *personally* write to you on the subject, but unfortunately his health makes it impossible; which he and you, as well as ourselves, sincerely regret.

"We cordially wish that your energy and vigour may be maintained for many, many years, to bless your family, to promote as heretofore the well-being of the Society, and of everybody about you.

— Yours faithfully, for the Subscribers.

— (Signed) JOEL WAINWRIGHT."

Mr. REED responded in appropriate terms.

Mr. REED gave a short address on "Cuba," in order to exhibit to the members a fine set of lantern slides illustrating the life and scenery of that island.

Mr. GINGER expressed, on behalf of the meeting, sincere thanks to Mr. Reed for his services that evening.

The 741st Meeting of the Society was held on Tuesday, December 18th, 1906, at 6-30 p.m., and took the form of a Lecture to the Children of the Members. In the chair, Mr. T. W. SOWERBUTTS.

As Mr. J. Howard Reed was ill in bed with influenza, Mr. JAMES S. REID, at considerable inconvenience, kindly took his place, and explained to the children a set of slides illustrating "Fifty Wonders of Nature and Art," then reading the touching story of "Jane Conquest," concluding with a few amusing pictures.

A round of hearty applause in thanks to Mr. Reid was given by the children, and the proceedings terminated after a vote of sympathy with Mr. Reed in his illness had been passed.

LIST OF MAPS, BOOKS, JOURNALS, ADDI- TIONS TO THE MUSEUM, &c.,

ACQUIRED BY THE SOCIETY FROM JANUARY 1ST TO DECEMBER
31ST, 1906.

MAPS.

EUROPE.

- Ordnance Survey of England. Sheet 98, Stockport. Sheet 99, Chapel-en-le-Frith. Scale, 1 inch to a mile.
- The Crown Map of Lancashire and Cheshire. Printed and compiled by W. and A. K. Johnston Limited, Edinburgh. Scale, 3 miles to an inch. Manchester: Bartley and Travis. 1906.
- Nouvelle Carte de la Suisse. Scale, 6 miles to an inch. Londre: W. Faden. 1778. *Mr. R. J. Taylor, per Mr. David Jackson.
- Map of Turkey. Scale, 1/250,000. Constantinople Sheet. Topographical Section, General Staff, No. 2,097. *The Director of Military Operations.

ASIA.

- New Orographical Map of Asia. Compiled under the Direction of H. J. Mackinder, M.A. Scale, 1/8,721,500. London: Edward Stanford. 1906. *The Publishers.
- Map of Afghanistan. Based on Survey of India Map-. Scale, 1/2,027,520. T.S., G.S. No. 1947. *The Director of Military Operations.
- Map of Hong Kong and of the Territory leased to Great Britain under the Convention between Great Britain and China, signed at Peking on the 9th of June, 1898. Scale, 1/84,480. T.S., G.S. No. 1393. War Office, August, 1905. *The Director of Military Operations
- Map of the Province of Chê-Chiang. (Provisional Issue.) Scale, 1/1,000,000. T.S., G.S. No. 2152. *The Director of Military Operations.
- Map of the Province of Chih-Li. Scale, 1/1,000,000. T.S., G.S. No. 2095. *The Director of Military Operations.
- Map of the Province of Ho-Nan. Scale, 1/1,000,000. T.S., G.S. No. 1994. *The Director of Military Operations.
- Map of the Province of Shan-tung. Scale, 1/1,000,000. T.S., G.S. No. 1936. War Office, 1905. *The Director of Military Operations.
- Map of the Province of Su-Ch'uan. (Eastern Sheet.) Scale, 1/1,000,000. T.S., G.S. No. 2048. *The Director of Military Operations.

AFRICA.

Index Map of Africa to sheets on Scale of 1/1,000,000 and 1/250,000. T.S., G.S. No. 1544. (Revised Edition.) *The Director of Military Operations.

Africa. Scale, 1/1,000,000. Sheet 72 Kumase, Sheet 84 Nouvelle Anvers. Sheet 86 Albert Nyanza, Sheet 115 Andara, Sheet 123 Angra Pequena. T.S., G.S. No. 1539. *The Director of Military Operations.

Africa. Scale, 1/1,000,000. Bahr el Ghazal. Parts of Sheets 77, 78, 85, and 86. T.S., G.S. No. 2102 *The Director of Military Operations.

Africa. Scale, 1/1,000,000. Orange River. Parts of Sheets 127 and 128. T.S., G.S. No. 2145. *The Director of Military Operations.

Africa. Scale, 1/250,000. Sheets 58 L, 58 P, 59 I, 59 M, Sierra Leone. Sheets 60 G, 60 H, 60 K, 60 L, 60 O, 60 P, Gold Coast. Sheet- 63 A, 63 M, Northern Nigeria. Sheets 70 D, 71 A, Sierra Leone. Sheets 72 C, 72 D, 72 O, Gold Coast. Sheets 86 A, 86 C, 86 D, 86 E, 86 G, 86 H, 86 I, 86 K, 86 L, 86 M, 86 N, 86 O, 86 P, Uganda. Sheets 94 A, 94 B, 94 C, 94 D, 94 E, 94 F, 94 G, 94 H, 94 I, 94 J, 94 K, 94 L, 94 M, 94 N, 94 O, 95 A, East African Protectorate. T.S., G.S. No. 1764. *The Director of Military Operations.

Anglo-German Boundary in East Equatorial Africa. Triangulation Chart. Sheets 1, 2, and 3. British Commission Triangulation. 1904-1905. Scale, 1/400,000. T.S., G.S. No. 2220. *The Director of Military Operations.

AMERICA.

Panama. Scale, 1/1,000,000. T.S., G.S. No. 2081. War Office, May, 1906. *The Director of Military Operations.

OCEANIA.

Geological Sketch Map of Queensland, showing Mineral Localities. Prepared under the Supervision of B. Dunstan, F.C.A., and Compiled by H. W. Fox. Scale, 40 miles to 1 inch. Brisbane: Geological Survey Office. 1905. *Queensland Geological Survey.

Geological Map of Little Forest and Conjola. With Sections. Showing Gréta (or lower) Coal Measures. By J. B. Jaquet, A.R.S.M., F.G.S., and L. F. Harper, F.G.S., Geological Surveyors. Scale 1 inch to a mile. To accompany Records Geological Survey, New South Wales, Vol. VIII., Part 2, 1906. *Geological Survey.

Geological Map of the Gerringong District (with Sections) by L. F. Harper, F.G.S., Geological Surveyor. Scale, 4 inches to a mile. To accompany Records Geological Survey, New South Wales, Vol. VIII., Part 2, 1906. *Geological Survey.

ATLASES, ALBUMS, &c.

Atlas of Modern and Ancient Geography. London and Edinburgh: W. and R. Chambers. 1858. *Mr. George Thomas.

Atlas of the World's Commerce. By J. G. Bartholomew, F.R.G.S., F.R.S.E. Parts 1-17. London: George Newnes Limited. 1906. *The Publishers.

Pocket Atlas of the Counties of South Britain or England and Wales. London: Carington Bowles (about 1789). *Mr. Charles Reoder.

Climatological Atlas of India. Published by the Authority of the Government of India, under the Direction of Sir John Eliot, K.C.I.E., F.R.S. Issued by the Indian Meteorological Department. 1906. *The Secretary of State for India in Council.

Atlas to accompany Monograph XXXII. on the Geology of the Yellowstone National Park, by Arnold Hague. Washington: United States Geological Survey. 1904. *Director of the Survey.

Panorama of Constantinople (framed photo, 6 feet by 15 inches). *Mr. George Thomas.

Panorama Ofver Norrköping. *Mr. George Thomas.

106 Photographs on 49 Mounts (21½ inches by 14½ inches) in a specially designed box. *Mr. George Thomas.

BOOKS.

GENERAL.

A Progressive Course of Comparative Geography on the Concentric System, by P. H. L'Estrange, B.A. Illustrated by 177 Pictures and Diagrams in the Text, and accompanied by 172 Maps and Diagrams in Colour, with Index, forming a Complete Atlas. London: George Philip and Son. 1906. *The Publishers.

Geographical Gleanings, by the Rev. Frank R. Burrows, M.A. London: George Philip and Son Limited. 1906. *The Publishers.

Bibliotheca Geographica, Band XI., 1902; Herausgegeben von der Gesellschaft für Erdkunde zu Berlin. Bearbeitet von O. Baschin. Berlin: 1905.

Eloges d'Elisée Reclus et de De Kellès-Krauz par Monsieur le Recteur Guillaume de Greef (with Portraits). Bruxelles: Université Nouvelle. 1906. *Institut Géographique Elisée Reclus.

Les Volcans de la Terre par Elisée Reclus. Premier Fascicule. Maps. Bruxelles: Société Belge d'Astronomie. 1906. *Institut Géographique Elisée Reclus.

A Complete Pronouncing Gazetteer or Geographical Dictionary of the World. Edited by Angelo Heilprin and Louis Heilprin. Philadelphia and London: J. B. Lippincott Company. 1906. *The Publishers.

Statistical Tables relating to British Colonies, Possessions, and Protectorates. Part XXIX. 1904. London: Printed for His Majesty's Stationery Office. 1906. *Mr. Harry Nuttall, M.P., F.R.G.S.

Professional Handbook of the Colonies. London: Emigrants' Information Office. 1905. *The Agent-General for the Cape of Good Hope.

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Brisbane. Royal Geographical Society of Australasia, Queensland Branch. (Nothing received.)

Brisbane. Queensland Museum. *Annals*. (Nothing received.)

Brisbane. Department of Mines. Geological Survey of Queensland. Nos. 201, 202, 203, 205.

Bulawayo. Rhodesia Scientific Association. *Proceedings*. 1905, Vol. V., Parts 2, 3; 1906, Vol. VI., Part 1.

Cape Town. South African Philosophical Society. *Transactions*. Vol. XVI., Parts 3, 4.

Halifax. Nova Scotian Institute of Science. *Proceedings and Transactions*. (Nothing received.)

Melbourne. Royal Geographical Society of Australasia, Victorian Branch. *Victoria Geographical Journal*. (Nothing received.)

Melbourne. Victorian Statistical Department. *Year Book*, 1905.

Perth. Western Australia. Geological Survey. *Bulletin*. Nos. 21, 22.

Port Moresby. Annual Report of British New Guinea for the year ending 30th June, 1905.

Quebec. Geographical Society. (Nothing received.)

Sydney. Royal Geographical Society of Australasia, New South Wales Branch. (Nothing received.)

Sydney. Department of Mines, New South Wales. Annual for the year 1905. *Records*. Vol. XVIII., Part II. (See list of Maps.)

Sydney. New South Wales. Department of Mines and Agriculture. Geological Survey. *Mineral Resources*, No. 11.

Toronto. Canadian Institute. (Nothing received.)

Victoria. Department of Mines. Province of British Columbia. Annual Report for the year ending December 31st, 1905.

Wellington. Department of Lands and Survey, New Zealand. Reports for the year 1905-6. C-1, General Report; C-1A, Surveys; C-1B, State Forests.

FOREIGN.

Alger. Société de Géographie. *Bulletin*. 1905, No. 4; 1906, Nos. 1, 2.

Antwerp. Société Royale de Géographie d'Anvers. *Bulletin*. Tome XXIX., Fascicule 4.

- Baltimore. Johns Hopkins University. Studies in Historical and Political Science. Series XXIII., Nos. 11, 12; XXIV., Nos. 1, 2, 5-10. Circulars. 1905, No. 9; 1906, Nos. 2, 3, 4, 5, 7, 9.
- Baltimore. Maryland Geological Survey. Wm. Bullock Clark, State Geologist. (Nothing received.)
- Bergamo. Rivista Mensile Illustrata D'Arte-Letteratura Scienze e Varietà Emporium. 1906, Nos. 133-144.
- Berkeley. University of California. Publications. Department of American Archaeology and Ethnology. Vol. IV., Nos. 1, 2. Geology. Vol. IV., Nos. 14, 15, 17, 18. Zoology. Vol. III., Nos. 2, 3, 4. Physiology. Vol. III., No. 7. College of Agriculture. Agricultural Experimental Station. Bulletin. Nos. 177, 178. The University Chronicle, an Official Record. Vol. VIII., No. 3.
- Berlin. Gesellschaft für Erdkunde. Zeitschrift. 1906, Nos. 1-10.
- Berlin. Deutsche Kolonialzeitung. Organ der Deutschen Kolonialgesellschaft. 1906, Nos. 1-52.
- Bern. Geographische Gesellschaft. Jahresbericht. (Nothing received.)
- Bordeaux. Société de Géographie Commerciale. Bulletin. 1906, Nos. 1-24.
- Boston, U.S.A. State Library of Massachusetts. (Nothing received.)
- Boston, U.S.A. Public Library of the City of Boston. Monthly Bulletin. Vol. XI., Nos. 1-12. Annual List of New and Important Books. 1904-1905. 54th Annual Report, 1905-6.
- Bourg. Société de Géographie de l'Ain. (Nothing received.)
- Bremen. Deutsche Geographische Gesellschaft. Blätter. Band XXIX., Heft 1-4.
- Brest. Société Académique de Brest. Section de Géographie. (Nothing received.)
- Brussels. L'Etat Indépendant du Congo. Bulletin Officiel. 1906, January-December.
- Brussels. Société Royale Belge de Géographie. Bulletin. 1906, Nos. 1-6.
- Brussels. Le Mouvement Géographique. 1906, Nos. 1-52.
- Brussels. La Belgique Maritime and Coloniale. Journal Hebdomadaire. 1906, January 1st to December 31st.
- Brussels. Institut Colonial Internationale. 8me Série. Les Lois Organiques des Colonies. Tomes 1-3.
- Brussels. Société d'Etudes Coloniales. Bulletin. 1906, Nos. 1-12.
- Brussels. Université Nouvelle, Institut Géographique de Bruxelles. (See List of Books.)
- Budapest. Société Hongroise de Géographie. Bulletin. Vol XXXIV., Nos. 1-10. Resultate der Wissenschaftlichen Erforschung des Balaton-sees. Vol. I., Parts 3, 4; II., 1, 2; III., 1, 2, 5. Topographischer und Geologischer Atlas (Balaton-see). Theil 1.
- Buenos Aires. Instituto Geografico Argentino. (Nothing received.)
- Buenos Aires. Oficina Demografica Nacional. Boletin Demografico Argentino. Año VI., No. 13, Jan.-Dec., 1905.

- Buenos Aires. Museo Nacional de Buenos Aires. (Nothing received.)
- Buenos Aires. Ville de Buenos Aires. Annuaire Statistique. 1905, XVme, Année. (See List of Books.)
- Buenos Aires. Monthly Bulletin of Municipal Statistics. 1906, Nos. 1-10.
- Cairo. Société Khédéviale de Géographie. Bulletin. Series VI., No. 10.
- Cambridge. Peabody Museum of American Archaeology and Ethnology. Harvard University. Papers. Vol. III., No. 4; IV., 2.
- Cassel. Verein für Erdkunde. (Nothing received.)
- Christiania. Norges Geografiske Opmaalng. (See List of Maps.)
- Copenhagen. Geografisk Tidsskrift udgivet af Bestyrelsen for det Kongelige danske Geografisk Selskab. Bind XVIII., Heft 5-8.
- Darmstadt. Verein für Erdkunde. Notizblatt. Folge IV., Heft 26.
- Dijon. Société Bourguignonne de Géographie et d'Histoire. Mémoires. Tome XXI.
- Douai. Union Géographique du Nord de la France. (Nothing received.)
- Dresden. Verein für Erdkunde. Mitteilungen. 1906, Heft 1, 2. Mitglieder-Verzeichnis. April, 1906. Gesamt-Register der Jahresberichte, 1863-1901.
- Dunkerque. Société de Géographie. Bulletin. 1905, No. 30; 1906, 31.
- Firenze (Florence). Rivista Geografica Italiana. Bollettino. Annata XIII., Fascicolo 1-10.
- Firenze (Florence). L'Opinione Geografica. Rivista di Geografia Didattica. 1906, Nos. 1-12.
- Frankfurt. Verein für Geographie und Statistik. (Nothing received.)
- Geneva. Le Globe. Organe de la Société de Géographie. Bulletin. Tome XLV., Nos. 1, 2, and Mémoires.
- Geneva. Société des Anciens Elèves de l'Ecole Supérieure. Bulletin. Nos. 71-74.
- Giessen. Geographische Mitteilungen aus Hessen. (Nothing received.)
- Griefswald. Geographische Gesellschaft zu Griefswald. (Nothing received.)
- Gutemala. Direccion General de Estadistica. (Nothing received.)
- Halle. Verein für Erdkunde. Mitteilungen. 1906.
- Halle. Kaiserlichen Leopoldinisch Carolinischen Deutschen Akademie der Naturforscher. Abhandlungen. Vol. LXXX., Nos. 1, 2. Leopoldina. Parts XXX.-XLI.
- Hamburg. Geographische Gesellschaft. Mittheilungen. Band XXI.
- Hamburg. Horizontalpendel Station. Dr. R. Schütt. Mittheilungen. 1905, Nos. 3-7. "Die Hauptstation für Erdbenenforschung am Physikalischen Staatslaboratorium zu Hamburg," von Dr. R. Schütt.
- Hannover. Geographische Gesellschaft. (Nothing received.)
- Havre. Société de Géographie Commerciale. Bulletin. 1905, No. 2; 1906, No. 1.
- Havre. Société Géologique de Normandie. Bulletin. 1905, Vol. XXV.

- Helsingfors. Société de Géographie de Finlande. Fennia, 19-22.
- Helsingfors. Meddelanden af Geografiska Föreningen. 1904-1906, Vol. VII.
- Hermannstadt. Siebenbürgischen (Transylvanian) Karpathenverein. (Nothing received.)
- Irkutsk. Imperial Russian Geographical Society. East Siberian Section. (Nothing received.)
- Jena. Geographische Gesellschaft. Mitteilungen. (Not received.) Das Heutige Mexiko. (See list of Books.)
- Kazan. Naturalists' Society of the Imperial University. Journal. Vol. XXXVIII., Nos. 4, 5, 6.
- Königsberg. Physikalisch-Ökonomischen Gesellschaft. Schriften. 1904, Vol. XLV.; 1905, XLVI.
- La Paz. Sociedad Geografica de la Paz. (Nothing received.)
- La Paz. Oficina Nacional de Inmigracion, Estadistica y Propaganda Geografica. Revista del Ministerio de Colonizacion y Agricultura. 1905, No. 4; 1906, No. 1. "Estudio sobre la Climatologia de La Paz." "Memoria que presenta el Ministro de Colonización y Agricultura al Congreso ordinario de 1906."
- La Plata. Direccion General de Estadistica de la Provincia de Buenos Aires. Boletin Mensual. 1906, Nos. 66-68. Demografia, Año 1899.
- La Plata. Museo de La Plata. Revista. Tomo XI.
- La Plata. Publicaciones de la Universidad de La Plata. (Nothing received.)
- Leipzig. Verein für Erdkunde. Mitteilungen. 1903, Heft II. Katalog der Bibliothek des Vereins. 1905.
- Lille. Société de Géographie. Bulletin. 1906, Nos. 1-12.
- Lima. Sociedad Geografica. Boletin. Tomo XVII., Nos. 3, 4. Memoria Anual y Anexos, 1904. Tomo XVI. Indigenas é Immigrantes en le Peru. (2 Maps.)
- Lima. Cuerpo de Ingenieros de Minas del Peru. Documentos Oficiales. Nos. 29-46. Segunda Memoria que presenta el Director, 1904-1905.
- Lisbon. Sociedade de Geographia de Lisboa. Boletim. Serie XXIV., Nos. 1-12.
- Louvain. Zoological Institute, University of Louvain. (Nothing received.)
- Lübeck. Geographische Gesellschaft und Naturhistorische Museums. Mitteilungen. Heft 21.
- Lwowie (Lemberg). Polskugo Towarzystwa Handlowo-Geograficzna we Lwowie. (Nothing received.)
- Lwowie (Lemberg). Towarzystwa Ludozonawczego we Lwowie. Lud. XII., 1-4.
- Madison. Wisconsin Academy of Science, Arts, and Letters. (Nothing received.)
- Madison. Wisconsin Geological and Natural History Survey. Bulletin. No. XIV.
- Madrid. Sociedad Geografica. Boletin. Tome XLVIII., Nos. 1-4. Revista, Nos. 10-16.

- Madrid. Ayuntamiento de Madrid. Estadística Demográfica. 1906, January to March, May. Boletín. Nos. 470-522.
- Magdeburg. Museum für Natur-und Heimatkunde. Abhandlungen und Berichte. Band I., Heft 1-3.
- Marseille. Société de Géographie. Bulletin. Tome XXIX., Nos. 2-4; XXX., No. 1.
- Metz. Verein für Erdkunde. Jahresbericht XXV., 1905-1906.
- Mexico. Sociedad Científica "Antonio Alzate." Memorias y Revista. Tomo XXII., Nos. 7, 8; XXIII., 1-4.
- Mexico. Sociedad Mexicana de Geografía y Estadística. (Nothing received.)
- Milan. L'Esplorazione Commerciale. Vol. XXI., Nos. 1-24.
- Missoula (Montana). University of Montana. University Bulletin. Nos. 30, 32, 34, 35, 37.
- Montevideo. Museo Nacional. Anales. Vol. VI. Flora Uruguaya. Tomo III., Entrega 1.
- Montevideo. Boletín Mensual de Estadística Municipal del Departamento de Montevideo. (Nothing received.)
- Montpellier. Société Languedocienne de Géographie. Bulletin. Vol. XXVIII., No. 4; XXIX., 1, 2. Géographie Générale du Département de l'Hérault. Tome III. Histoire Générale. 11e Fascicule, Antiquités et Monuments.
- Moscow. Geographical Section of the Imperial Society of Natural Science of the University. (Nothing received.)
- Munich. Geographischen Gesellschaft, Mitteilungen. Erster Band, Heft 4.
- Nancy. Société de Géographie de l'Est. Bulletin. 1905, No. 4; 1906. Nos. 1, 2.
- Nantes. Société de Géographie. Bulletin. Année, 1905.
- Naples. Società Africana d'Italia. Bollettino. Vol. XXV., Nos. 1-12.
- Neuchâtel. Société Neuchâteloise de Géographie. (Nothing received.)
- New York. American Geographical Society. Bulletin. Vol. XXXVIII., Nos. 1-12.
- New York. American Bureau of Geography. (Nothing received.)
- New York. American Museum of Natural History. Memoirs. Vol. IX., Parts 2, 3. 37th Annual Report, 1905.
- New York. The Journal of Geography. Vol. V., Nos. 1-10.
- New York. Public Library (Astor, Lenox, and Tilden Foundation). Bulletin. Vol. X., Nos. 1-11.
- Nürnberg. Naturhistorische Gesellschaft. Abhandlungen. Band XV., Heft III. Jahresbericht für 1904.
- Odessa. Club Alpin de Crimée. Bulletin. 1906, Nos. 1-12.
- Omsk. Imperial Russian Geographical Society. West Siberian Branch. (Nothing received.)
- Oran. Société de Géographie et d'Archéologie. Bulletin Trimestriel. 1906. Tome XXVI., Nos. 106-109.

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- Para (Brazil). Museo Paraense de Historia Natural e Ethnographia. Memoria-. Vol. IV., No. 4, March, 1906. Aboratum Amazonicum, Décades 3, 4.
- Paris. Société de Géographie. "La Géographie." Tome XII., Nos. 5, 6; XIII., 1-6; XIV., 1.
- Paris. Société de Géographie Commerciale. Bulletin. Tome XXVIII., Nos. 1-12.
- Paris. Société de Spéléologie. Spelunca. Tome VI., Nos. 44-46.
- Paris. Société de Topographie. Bulletin. Tome XXIX., Nos. 10-12; XXX., 1-6.
- Paris. Comité de l'Afrique Française. Bulletin. 1906, Nos. 1-12. Les Renseignements Coloniaux, Nos. 1-12.
- Paris. Service Géographique et des Missions du Ministère des Colonies. Revue Coloniale. New Series. Nos. 40, 44.
- Paris. Statistique Municipale. Ville de Paris. (Nothing received.)
- Philadelphia. American Philosophical Society. Proceedings. Vol. XLV., Nos. 182, 183. Record of Franklin Bi-Centennial Celebration. (See list of Books.)
- Philadelphia. Commercial Museum. (Nothing received.)
- Philadelphia. Geographical Society. Bulletin. 1906, January to October.
- Philadelphia. The Department of Archæology, Free Museum of Science and Art, University of Pennsylvania. Transactions. Vol. II., Part 1.
- Prague. Société de Géographie tchèque à Prague. (Nothing received.)
- Rochefort. Société de Géographie. Bulletin. 1905, Nos. 3, 4; 1906, Nos. 1, 2.
- Rolla, Mo. Missouri Bureau of Geology and Mines. Second Series. Vols. III., IV.
- Roma. Società Geografica Italiana. Bollettino. Vol. VII., Nos. 1-12.

Presented by Signor LUIGI BODIO.

- Rome. Institute Internationale de Statistique. Bulletin. Vol. XV., Part 2.
- Rome. Bollettino dell' Emigrazione. 1906, Nos. 1-16.
- Rome. Statistica Industriale. Riassunto delle Notizie sulle Condizioni Industriali del Regno. Parte I.-III.
- Rome. Statistica della Emigrazione Italiana per L'Esterio. Negli anni.
- Rome. Emigrazione e Colonie. Vol. II., Asia-Africa-Oceania.
- Rome. Censimento della Popolazione del Regno d'Italia.
- Rome. Movimento della Popolazione Secondo Gli Atti dello Stato Civile Nell' Anno 1904.

Rome. Istituto Cartografica Italiana. (Nothing received.)

Rouen. Société Normande de Géographie. Bulletin. 1905, October to December.

- San Francisco. Southern Pacific Railway. "Sunset." Vol. XVI., Nos. 3-6; XVII., Nos. 1-4; XVIII., Nos. 1, 2.
- San Francisco. Geographical Society of the Pacific. (Nothing received.)
- San Francisco. Geographical Society of California. (Nothing received.)
- San José. Instituto Fisco Geografico de Costa Rica. (Nothing received.)
- San Salvador. Observatorio Astronómico y Meteorológico. (Nothing received.)
- Santa-Fe. Municipalidad de Santa Fe. Oficina de Estadística. Boletín. 1906, Nos. 18, 20. Anuario Estadístico de la Ciudad de Santa Fe. Año II., 1905.
- St. Nazaire. Société de Géographie. (Nothing received.)
- St. Petersburg. Imperial Russian Geographical Society. Journal. Vol. XLII., Nos. 1, 2, 3.
- Santiago (Chili). Deutsche Wissenschaftlichen Vereins Verhandlungen. (Nothing received.)
- Shanghai. Imperial Maritime Customs. China. I., Statistical Series, No. 2, Customs Gazette, No. 149; Nos. 3 and 4, Parts 1 and 2 (Vols. 1-5), Returns of Trade and Trade Reports for 1905; Part 3, Reports and Statistics for each port (Vols. 1, 2).
- Stettin. Gesellschaft für Völker- u. Erdkunde. Bericht, 1905-1906.
- Stockholm. Svenska Sällskapet för Antropologi och Geografi. Ymer, 1906, 1-4.
- Stuttgart. Württembergische Vereins für Handelsgeographie. (Nothing received.)
- Tokyo. Geographical Society. Journal. Vol. XVIII., Nos. 205-210.
- Toulouse. Société de Géographie. Bulletin. 1905, Nos. 3, 4; 1906, No. 1.
- Tours. Société de Géographie. Revue. 1906, Vol. XXIII., Nos. 1, 2.
- Upsala. Geological Institution of the University of Upsala. Meddelanden. Nos. 29, 30. Bulletin. Vol. VII., Nos. 13, 14.
- Vienna. K. K. Geographische Gesellschaft. Mittheilungen. Vol. XLIX., Nos. 1-10.
- Vienna. Verein der Geographen an der K. K. Universität in Wien. Bericht über das XXIX. und XXX. Vereinsjahr (1902-3 und 1903-4) und Geographischer Jahresbericht aus Österreich. IV., Jahrgang.
- Vienna. K. K. Naturhistorisches Hofmuseum. Annalen. Band XX., Nos. 1-4.
- Washington. National Geographic Society. Magazine. Vol. XVII., Nos. 1-12.
- Washington. United States Department of Commerce and Labour. Coast and Geodetic Survey. Report for the year ending June 30th, 1905, and Appendix No. 3. Report for the year ending June 30th, 1906, and Appendices Nos. 3, 4.
- Washington. United States Geological Survey. C. D. Walcott, Director. 26th Annual Report, 1904-5. Mineral Resources of the United States, 1904.

- Washington. United States Geological Survey. Monographs. Vol. XXXII. (Atlas.)
- Washington. United States Geological Survey. Professional Papers. Nos. 43-45, 47-51, 55. (See list of Books.)
- Washington. United States Geological Survey. Bulletins. Nos. 265, 269, 272-275, 277, 278, 280-285, 288-293, 298, 301. (See list of Books.)
- Washington. United States Geological Survey. Water Supply and Irrigation Papers. Nos. 148, 150, 153-160, 162-181, 186. (See list of Books.)
- Washington. Smithsonian Institution. (Nothing received.)
- Washington. United States National Museum. Report for the year ending June 30th, 1904.
- Washington. United States Department of Agriculture. Weather Bureau. Report of the Chief for 1904-1905.
- Washington. United States Department of Agriculture. Weather Bureau. Monthly Weather Review. 1905, Annual Summary; 1906, January to October. Bulletin P. Bulletin Q. (See List of Books.)
- Washington. United States Board on Geographic Names. (Nothing received.)
- Washington. United States War Department. Military Information Division. (Nothing received.)
- Washington. United States Bureau of Education. Report of the Commissioner of Education for the year ending June 30th, 1904. Vols. I., II.

THE MUSEUM.

ACCESSIONS.

- Opium-smoker's Outfit: 4 Vessels, 2 Mouthpieces, 2 Knives, 1 Pair of Scissors, and 1 Opium Jar. *Mr. Charles Roeder.
- Ten Coloured Pictures given to Worshippers at Wu Tai Shan. *Professor R. W. Swallow, B.Sc.
- Copies of Famous Chinese Writings. *Professor R. W. Swallow, B.Sc.
- Chinese Carved Frame. *Professor R. W. Swallow, B.Sc.
- Chinese Counting Frame. *Professor R. W. Swallow, B.Sc.
- Two Chinese Combs. *Professor R. W. Swallow, B.Sc.
- A Pair of Lady's Shoes (Chinese). *Professor R. W. Swallow, B.Sc.
- A Pack of Chinese Playing Cards. *Professor R. W. Swallow, B.Sc.
- A Chinese Menu. *Professor R. W. Swallow, B.Sc.
- Invitation Ticket to the Shansi University Sports. China *Professor R. W. Swallow, B.Sc.
- A Book on Trigonometry ((Chinese). *Professor R. W. Swallow, B.Sc.
- Chinese Opium Pipe. *Professor R. W. Swallow, B.Sc.

Chinese Opium Jar. *Professor R. W. Swallow, B.Sc.

Two Poppy Heads (Opium) China. *Professor R. W. Swallow, B.Sc.

Chinese Beads. *Professor R. W. Swallow, B.Sc.

Samples of Millet and other Grasses (Seeds, etc.), grown in China
*Professor R. W. Swallow, B.Sc.

A Small Animal (Horse) used by Chinese Children. *Professor R. W.
Swallow, B.Sc.

Cotton Pods from the United States. *Mr. Isaac Chorlton.

Cop of Cotton (showing Method of Winding). *Mr. Isaac Chorlton.

Samples of Bog Earth, Compressed for Fuel, from Boston. *Mr. Thomas
Haworth, of Burnley.

A Pod of Brazil Nuts or Shoe Nuts. (With full description.) *Mr. G. H.
Warren.

Snake Skin. *Mr. J. Howard Reed.

LIST OF MEMBERS.

December 31st. 1906.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate, * Affiliated Societies. All others are Ordinary Members.

- Abbott, James H.
Adam, Sir Frank Forbes, C.I.E.
L Ainsworth, John, C.M.G. (Nairobi)
Alexander, Bernard
Alexander, W. T., J.P.
H Argyll, His Grace the Duke of, K.T.
Armistead, Richard
Armstrong, F.
Arning, A. W.
Arnold, W. A.
Ascoli, E.
Ashman, Edwin
Ashworth, Francis, J.P.
A Ashworth, Miss M. L.
Ashworth, Wm., F.C.A.
- Balmer, J. E., F.R.G.S.
L Balmforth, Alfred
Bardsley, G. W.
Barlow, John R., J.P.
Barningham, James
Barningham, Thomas
Baronian, Z. S. Ipliejian
A Baxandall, Miss C.
A Bayley, Mrs. C. H.
Beer, Walter
Behrens, Councillor Charles
Behrens, Gustav, J.P.
Behrens, Oliver P.
H Belgians, His Majesty the King of the, K.G.
c Bellamy, C. H., F.R.G.S., Tourcoing
A Bellamy, Basil G.
Bennie, Andrew
Bentley, Miss R.
Bentley, John Howard, F.R.G.S.
Benton, John
Berry, R. H.
A Bickerton, Richard
Black, Surgeon-Major W. G., F.R.C.S.E.
Blake, George Ingle
Blake, John Charles, F.R.G.S.
A Blanchoud, Mdlle.
A Bleloch, W.
Bles, A. J. S.
Bles, Marcus S., J.P.
L Boddington, Henry, J.P.
c Bolio, Professor Luigi, Rome
A Bolivar, Mrs. A. de
A Bolivar, Miss G. de
H Bonaparte, S. A. Prince Roland, Paris
Bornmüller, Rudolph
A Bosworth, George R.
Bowes, George T.
- Bradley, N., J.P.
Bradshaw, Wm.
Bramwell, Samuel
c Brice, A. Montefiore, F.R.G.S.
Bridge, Alfred
Brier, Charles
L Brierley, James, B.A., F.R.G.S.
Briggs, Herbert
Britten, S.
Broadhurst, E. Tootal, D.L., J.P.
Brooks, J. B. Close
L Brooks, Mrs. S. H.
L Brooks, S. H., J.P., F.R.G.S.
Broome, Henry
Broome, Joseph, J.P.
Brownrigg, W. F.
Brown, R. Hope, Carlisle
Brunner, Charles
Bryant, James
c Bryce, J. Annan, M.P.
Buckley, W. H., J.P.
Burgon, Councillor Anthony
* Burnley Literary and Scientific Club
Burton, Frank
L Burton, Frederic
A Burton, R. Graham
Butterworth, Councillor Walter, J.P.
Bythell, J. K., J.P.
- Calcutta, Imperial Library
Calvert, D. R.
Campbell, Richardson
A Cardwell, J. J.
A Careswell, George
Carson, Isaac Pitman
L Carver, W. Oswald
Chapman, Wm.
Cheetham, J. F., M.P.
Child, J.
Chorlton, Isaac
Chorlton, James
Chorlton, J. C., J.P.
Churchill, Wm. W., junr.
Clapham, Col. W. W.
A Clarke, Charles A.
Cocks, John
A Cohen, Meyer
c Colbeck, Rev. A.
L Colley, T. H. Davies
A Collinge, Miss A.
Collmann, C., Consul for the German Empire
c Colquhoun, A. R., F.R.G.S., M.I.C.E.
Colliver, Peter

- Congo State, M. le Secrétaire General,
 Département de l'Intérieur
- Cook, George T.
- ^LCooper, Mrs. A. H.
- Core, Professor T. H., M.A.
- Cox, Dr. Frederic.
- Crawford, Wm. L.
- Credson, Alfred
- Crompton, Thos. A.
- Crook, Col. H. T., J.P., C.E.
- Crossley, W. J., M.P.
- Crowther, Miss E., Altrincham
- Dann, E. W., B.A., F.R.G.S.
- Darby, Rev. R. D.
- ^ADavies, Charles J.
- Dawkins, Prof. W. Boyd, J.P., M.A.,
 F.R.S.
- ^ADawson, Charles
- Dawson, T. Kyle
- Deakin, Edward, junr.
- ^ADeakin, G. G. D.
- Deakin, Thos. S.
- Dean, Councillor J.
- Dennis, Cammack
- Dentith, Mrs. T., Dobercross
- Derby, The Rt. Hon. the Earl of, K.G.
- Devonshire, His Grace the Duke of, K.G.
- Donnell, Joseph
- Donner, Edward
- ^ADowdall, J. B.
- ^LDoxey, Alex.
- Duckworth, Charles
- Duckworth, Alderman James, M.P.,
 F.R.G.S.
- Dutton, Thomas
- Earnshaw, Jacob, F.S.A.A.
- Earnshaw, John A.
- Eason, Edward A.
- *Eccles Prov. Ind. Co-op. Soc., Ltd.
- Eckersley, William
- Egerton of Tatton, The Right Hon. the,
 Earl
- Ellinger, Martin
- England, A.
- ^LErmen, Charles
- Eubank, Rev. R.
- Eustace, Rev. Alfred, M.A.
- Evans, E. Russell
- Fairhurst, Mrs.
- Farmer, R. J.
- *Farnworth-with-Kearsley P.C.M.L. Sy.
- Felber, Harold
- ^cFelotoff, A., Moscow
- Ferguson, Wm.
- Fern, George
- ^cFief, J. du, Royal Belgian Geographical
 Society
- Finnigan, Wm., junr.
- ^cFisher, Rev. A. B., F.R.G.S.
- Fletcher, R.
- Follows, F. W.
- Fooks, C. F.
- Forsyth, Henry
- Franc, Henry
- Frank, Ernest
- Frankenburg, Alderman I. (His Worship
 the Mayor of Salford)
- ^AFreeman, W. C.
- ^HFreshfield, Douglas W., F.R.G.S.
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 V.G.
- Gaddum, G. H., J.P.
- Galloway, George, J.P.
- Galloway, W. Johnson, J.P.
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- Ginger, George
- Gleave, Joseph James
- Glossop, J. P. B.
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- Godlee, Francis
- Goetz, Edward
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- Goodwin, Alfred
- Gordon, T. Hodgetts, B.A., C.C.
- ^AGreenough, Richard, Leigh
- ^AGreenwood, Alderman Jas., J.P.
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- Gregory, Theodore, F.C.A.
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- ^LGroves, W. G., J.P.
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- ^cHallett, Holt S., M.I.C.E., F.R.G.S.
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- Hallworth, Joseph
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- Hampson, James
- ^AHandcock, H. C.
- ^cHanlon, Rt. Rev. Henry, Bishop of Teos,
 and Vicar Apostolic of the Upper
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- Hardman, John, Radcliffe
- Hargreaves, George
- ^AHarker, George
- ^AHarper, William

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THE
MANCHESTER GEOGRAPHICAL SOCIETY.

RULES.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relation to commerce and civilisation.

The work of the Society shall be:—

1. To further in every way the pursuit of the science; as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonisation and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object, and shall not make any dividend, gift, division, or bonus in money unto or between any of its members.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1 1s., or he may compound by one payment of £10 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members. Any member, whose subscription is in arrear for two years shall not be entitled to receive the *Journal of the Society*.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceedings shall be as follows:—

- (a) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.
- (b) Presents, whether of money, books, maps, charts, instruments or specimens made to the Society to be announced.
- (c) The election of new members to be declared and the names of candidates to be read.
- (d) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of such meeting shall be sent to every member within the United Kingdom who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by 20 ordinary members.

35. A week's notice of the time and object of every special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.

THE COUNCIL.

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the most efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and Officers, and to summon, when necessary, special meetings of the Council and of Committees.

TREASURER.

45. The Treasurer has the charge of all accounts; he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank pass-book and the book of accounts shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

SECRETARIES.

49. The duty of the Honorary Secretaries shall be:—

- (a) To conduct the correspondence of the Society and of the Council.
- (b) To attend the meetings of the members and of the Council, and minute their proceedings.
- (c) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission, and the papers communicated to the Society, which have been directed by the Council to be read.
- (d) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture, and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies, and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society, and to act under the instructions of the Council.

The foregoing Rules, as now amended, were approved and adopted at a meeting of the members of the Society, of which due notice had been given to the members, held in the Town Hall, Manchester, Wednesday, October 3rd, 1894.

(Signed)

GEORGE, *President.*

S. ALFRED STEINTHAL, *Chairman.*

F. ZIMMERN, *Honorary Secretary.*

JAS. D. WILDE, M.A., *Honorary Secretary.*

ELI SOWERBUTTS, *Secretary.*

[COPY.]

It is hereby certified that this Society is entitled to the benefit of the Act 6 and 7 Vict., Cap. 36, intituled "An Act to exempt from County, Borough, Parochial, and other Local Rates, Lands, and Buildings occupied by Scientific or Literary Societies."

Seal of Registry of
Friendly Societies.

This 15th day of January, 1895.

E. W. B.

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JOURNAL
OF THE
MANCHESTER GEOGRAPHICAL
SOCIETY



VOL. XXIII.

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The Journal

OF THE

Manchester Geographical Society.



"A HOLIDAY IN THE FAR WEST."

By Mr. JOHN DENDY.

(Addressed to the Society, in the Geographical Hall, on Tuesday,
January 8th, 1907.)

EVERY lecturer is entitled to his introductory apologies and explanations. Mine shall be as brief as possible.

I am not here to give useful information. We went to Canada for pleasure and refreshment which we got abundantly, but we did not pretend to accumulate statistics nor qualify as advisers to intending emigrants. Nor shall I indulge in generalisations and prophecies as to the present and future of that great country. There are travellers who can study an empire in a month, and give you the results in half an hour. I am not one of them. At most I can hope to give you some idea of what some parts of the Far West look like. But certain general impressions one did receive, which had a good deal to do with the happiness of our visit. There was a feeling of a widespread and reasonable prosperity: that the man who would face hard work, and was not a fool, had a safe future before him. The problems of extreme poverty and keen competition for the means of living did not seem to press as they do here. And the drink problem was at any rate far less obtrusive. People seemed healthier and happier, more hopeful and more vigorous. Again, there was the feeling of a far more genuine

equality than we have here. Men seemed to be taken much more on their merits and less on their wealth or the nature of their employment. Of civility we found no lack, of servility hardly a trace. Political freedom seemed to be backed by social freedom in a way in which it is not here. And the bitter religious strife which is disfiguring our national life so greatly to-day was not forced upon one's attention there. Now these things had much to do with the enjoyment of our visit, for they helped to create for us an atmosphere which it is as impossible for me to reproduce here as it would be to bring into this room the sweet cool breezes that ruffled the waters of Lake Huron, or the bright sunlight that was ripening the grain in Manitoba.

We travelled some 12,000 miles by land and water, but lingered only in the Far West, to which we were drawn by its splendid scenery, the presence there of friends, and the chance of seeing something of the settlers' fight with nature and the beginnings of civilised life in wild places. There only shall I linger to-night, not pausing by the way to dwell on the novel experience of ocean travel and the splendid storm we passed through. We must not linger on the noble stream of St. Lawrence, with its great cities of Quebec and Montreal, nor at Toronto, most charming of modern towns, with its beautiful leafy suburbs and its noble University buildings. We must pass without notice through the settled, prosperous, farming lands of Ontario, down to the shores of Lake Huron, and away from it at once in a luxuriously appointed steamboat for two delightful and restful days upon the great inland seas. Landing at the head of Lake Superior, we must not pause in our 48 hours' journey by train through Winnipeg, and across the vast prairie lands which rise imperceptibly but steadily towards the mountain wall of the Rockies. Very interesting, beautiful, and impressive in their own way are those vast reaches of level lands, sweeping away to a distant horizon on every side, at times largely cultivated and dotted with little homes with their evidence of hard work and growing prosperity—at other times wild and solitary as they have ever been, save that here and

there a herd of wandering cattle reminds you that the rancher is in possession. Interesting, too, is the chain of towns strung like beads along the railway line, some already considerable, some the merest beginnings, all alike confident that they have a great future before them. At Calgary, the last of these towns, we should have been in sight of the great mountains, but we had run into bad weather, in which the prairie looked, it must be confessed, a little dreary. Thenceforward we could only see



Fig. 1. "Cascade Mountain. Banff."

that we were rising rapidly through the foot hills and coming in an astonishingly short time into the neighbourhood of snow-clad mountains, a strange contrast to the flat world we had left behind. Banff was our destination, and our first evening showed us little but suggestions of big things around us. All the more impressive was the contrast, and all the more joyfully did we wake next morning to a glorious May day, and a view from our window which remained an unfailing delight during

our week's stay. Banff is well-named the "Beautiful." I see that writing at the close of our first perfect day we called it the "Gates of Heaven." It has one qualification for that title in lying on the southern slope of the Rocky Mountains 4,500 ft. above sea level. At that altitude in early summer the unclouded sunshine only serves to lend an added sweetness to the pure, cool air, and a brilliancy to the masses of snow which still cling comparatively low down on the surrounding mountains. Yet it is only these things, the keen air and the snow, which enable you to realise the height at which you are. (See Fig. I.) For you find yourself in a richly-wooded valley, from out of which the dark pines and firs, interspersed with lighter foliage, such as that of the Birch and the young Cotton Wood climb high up many of the surrounding mountains in fine contrast with the snowy peaks, visible in every direction through and above the woods. The Bow River pours its swift green waters along the valley, forming a fine cascade a little way below the village, and just before they are joined by the more milky waters of the Spray. Through the woods paths, or trails, as they are called there, are cut in various directions, to which you must keep pretty close: not indeed that "trespassers will be prosecuted," but because trespassing is too difficult. It was here that we first realised what an ancient forest is like, and the difference between it and an ordinary wood, though we saw more wonderful ones elsewhere. In all directions the ground beneath the living trees is densely cumbered with the dead, in every stage of decay and every possible position, to be climbed over, dodged round, or wriggled under. Often too there is a dense living undergrowth, often also wonderful masses of fern, and moss, and lichen. Many birds, beautiful in plumage, but not great at singing, are to be seen; but at Banff the chief delight in the woods were the charming little "chipmunks," a kind of small and often brightly-coloured squirrel. These are wonderfully tame; they seem to know the law of the place, which allows no wanton destruction of animal life. But Banff lies in the great National Park, is indeed the administrative centre of it. The National Park is

one of the great institutions of Canada. In its two sections it comprises an area three times as large as Lancashire, and includes some of the finest scenery in the world. It is reserved as the property of the nation: saved for ever alike from the enclosures of the sportsman and the encroachments of the jerry builder, the desecrations of the manufacturer, and the abominations of the advertising agent. Nor is it for the good of men only, but also of the wild creatures who within its limits are protected from the gun and from the snare. The great buffaloes, so nearly exterminated, have with a few elk and deer a special enclosure of their own, where a fine herd of them is increasing in numbers. You can ride or drive among them and take their portraits from a carriage, but on foot it is not safe to visit them.

. It is the being in the Park which keeps Banff itself a comparatively small but well-laid-out village, under strict Government control, exercised not with a view to profit but to keeping the place beautiful. No local Town Council is allowed to boom and spoil it. There are a few good shops, two good hotels, and away up on a mountain side a Government Bathing Establishment at the Hot Springs, where strong sulphur water bubbles out at a temperature of 120 degrees, and is said to have wonderful medicinal properties. Also there are charming wooden bungalows buried in the pine woods, which you may hire for a week or more and picnic in to your heart's content; but no rows of lodging houses, or villa residences, or works of any kind.

We climbed some of the lesser hills, and from one of them, Sulphur Mountain, still deep in snow at the top, though only some 7,000 ft. high, surveyed a great panorama of mountain ranges running in many directions, and distinguished by a strange wildness and ruggedness of outline. They are often toothed, and notched, and castellated into extraordinary shapes. I am told that these mountains being geologically younger, and also in parts composed of a harder rock than those we are here accustomed to, or even than the Swiss Alps, have not yet been so much weather-worn and smoothed down in their outlines as

is the case with older ranges. Here and there you do get rounded hills or perfect cones of snow, but they are not characteristic.

Our chief excursion here was to Devil's Lake, or, to give it its preferable Indian name, Lake Minnewanka. It lies 9 miles away from Banff, with a solitary house on its shores kept by an elderly Cornishman, who takes you out in pursuit of its big fish, trout of a special breed that run up to 20 or even 30 pounds in weight. I got none heavier than $5\frac{1}{2}$, but had we caught nothing at all, the hours spent on its deep blue waters shoaling into delicate light blues and greens, and ringed round with noble mountains, some forest-clad and some precipitously rocky, on all sides leading up to snow fields and white peaks, would have compensated for the loss of all the fish in the world. And in the garden of the little house, the few plants in which were so eagerly and carefully tended by a bonny girl, whose knowledge of the world extended no further than Banff, one of us saw a lovely humming bird.

Banff is essentially a place of refreshment for mind and body. One wonders if it can be kept so, and made available at reasonable cost for larger numbers of tired workers, without vulgarising and spoiling it as is so often done in such places at home.

A year ago I do not think I could have found a good word for a railway which had dared to invade the heart of the mountains. One memorable Sunday when we traversed the Rockies and Selkirks from Banff to Glacier House has somewhat modified my views. The pictures may give you some faint idea of the marvellous scenery through which the C.P.R. line passes, but they cannot give you the effects of height and depth, nor the wonderful distant views of loftier summits, snow fields and glaciers which every branch valley discloses. From Banff to Glacier House is only about 140 miles, but it takes from 7 to 8 hours if nothing goes wrong. Slow going, but for good reason, for the line first climbs up the valley of the Bow for 700 ft. to the Kicking Horse Pass, then descends down the Kicking Horse

River for 43 miles to Golden on the great Columbia River, and in that descent drops no less than 2,640 ft. Here it passes out of the Rocky Mountains, and after running some 20 miles along the Columbia River turns into the Beaver Valley and begins to climb the Selkirks, the range which lies immediately west of the Rockies, and in a distance of only 22 miles ascends nearly 2,000 feet to the summit of Rogers Pass. So you will easily understand the slow going, which has to be almost as slow and careful down hill as up. And the pace has the great advantage that it gives you a chance of looking at the scenery. Special carriages also are put on with monster windows for this purpose, windows that on a fine day are kept open, so that you have almost as free a view as if you were driving in an open car. Better still is it to do as we did, and get out on the small platform at the end of the last carriage where, as you hold on tight lest you be thrown off when sudden curves are turned, the wonderful panorama unrolls itself hour after hour under a brilliant sun, until the eyes get too tired to take in any more, or, in the steeper places, an engine comes behind to help by pushing, and drives you inside.

Every yard of this journey is of fascinating interest and presents superb views. Much has been written and often in an exaggerated strain about this great feat of engineering, and the scenery which surrounds it. The difficulties were doubtless very great. At one time you may find yourself clinging high up on the side of a steep mountain face, and passing through tunnels in its projecting buttresses, and the next you are moving along near late lying patches of snow. At times in the wider parts a clear view of some isolated mountain mass is disclosed, and then again the valley closes in so narrowly that you wonder how space was found to plant the line beside the wild torrent that seems to claim it all. You may find yourself flying over a chasm of 300 ft. with a brawling waterfall and stream below, or in pleasant contrast gliding down the broad valley of the Columbia, with the peaks of the Rockies and the Selkirks marshalled in vast processions, receding beyond sight in the dis-

tance, on either hand. Most interesting, too, are the great stretches of forest, often alas terribly burned and destroyed. Sometimes through blackened stems you see the snowy peaks and distant glaciers, sometimes the dead trees are white and brilliant in the sunshine. It is especially in the Selkirks, and as you move west, that the trees become so great a feature and so endless a delight.

One word finally about the Railway. To me it did not seem to desecrate the mountains as it does in Switzerland. Wonderful as it is as a piece of work, it is so dwarfed by its surroundings that it seems to have no power to spoil them. I had a fanciful feeling that after all it was only there on sufferance, and that some day the mighty peaks, discharging their crushing avalanches, the solemn silent forests and the wild torrents, would put their heads together and quietly wipe it all out again; while the wild creatures, bears and deer, eagles and hawks, and even the greedy porcupines and friendly squirrels would look on approvingly. It is all too vast and grand even for a railway to spoil.

This day's journey landed us at Glacier House. The only buildings are just the station and hotel with its outhouses. There is nothing more. No roads but the railroad within I suppose 20 miles. No place where you could buy anything within nearly 40. It lies on the bend of a great horse-shoe curve, made by the railway as it descends the Selkirk Range. In front the forest falls sharply away into the deep, dark valley, beyond which a range of noble white peaks closes the view. Behind, the woods lead up to the ice fall and moraine of Illecillewaet Glacier, on one side of which rises Sir Donald, the best known mountain of these parts, to between 10,000 and 11,000 ft. A few trails run through the forest in various directions, by which you pass quickly from the luxury of a good hotel into scenes as wild as they are beautiful.

Let us for a few minutes take the one that leads to the Asulkan Glacier and Pass some 4,000 ft. above the Hotel. One of the many excellent arrangements of the C.P.R. is the pro-

vision of skilled Swiss Guides at the best climbing centres on its line. Under the care of a fine young fellow from Interlaken, and duly provided with the regulation rope and axes, we pass in the early morning of a doubtful day, which improves later on to perfection, into the solemn woods, whose silence is broken only by strange bird calls, the chattering of scolding squirrels, the shrill whistle of the marmot, sometimes by the rustle of a passing bear, and often by a scurry of a porcupine making for shelter in a convenient tree. Under the trees, over green carpetings of splendid oak ferns and many a strange and beautiful growth, we pass until we strike a foaming stream strangely dammed with a mass of fallen trees, the work of some avalanche or heavy wind, through and over which the milky glacier water pours in a quite novel kind of cascade. Presently following the stream the woods are left behind. Patches of winter snow, fast disappearing in the June sunshine, block the trail, while close beside them patches of the lovely golden Selkirk Lily, not unlike very delicate daffodils, follow up the melting snow. Mounting steadily the higher peaks begin to come into sight, and give a constant succession of glorious views, until the trail ceases near the glacier's foot, and some heavy plunging in deep snow lands us on the steep lateral moraine, up which lies our rather rough way, with the Ptarmigan, just changing their winter plumage, running on before us as tame as barn-door fowls. A halt at the top to put the rope on before taking to the glacier, gives a great view back, down to the main valley with Rogers Pass far away below us on the right. An hour or more's steady grind over the glacier and the névé above it, lands us at last in a very perfect little col with the giants of the Selkirks, the Dawson Range, full in view before us and separated from us only by the Great Fish Creek Valley, whose bottom lies darkly and precipitously some 3,000 ft. immediately below us. (See Fig 2.) It is a great place, deep in the heart of the mountains, and well worth the heavy plunging in softened snow and somewhat tumultuous glistading which are features of our descent. It is not every lady who goes to Glacier House that makes that

little 9 hours' trip. I remember that when we got back there was a train just in, and an American gentleman, making his half hour's inspection of the place, said to me :

" I guess there ain't any excursions here."

" No, sir," I answered, " unless you make them on your legs."

" Ah! I thought so," he said, regarding my muddy boots



Fig. 2. " In the Selkirks, Mounts Fox and Donkin, from the Asulkan Pass."

and my wife's scorched face with an amused contempt; and he went on by the same train.

When it came to our turn to depart from Glacier House we had a narrow escape. Our train was only about 4 hours late, but it was the last to come through for three days. On such a line as this you may at any time have a landslide, a wash-out, or a broken-down bridge, and though the extreme care taken makes life very safe, the same cannot always be said for time.

But you are kept advised hours before hand how late your train is running, and even, should it be an early morning one, are not called until it gets within reasonable distance.

Just below Glacier House you come on the celebrated "loops," where by a succession of very bold twists and turns the line descends a steep portion of the Illecillewaet Valley. The old wooden trestle bridges, passed over on these curves, which require a great amount of repair and are in constant danger from fires, are now being replaced by steel structures.

In a distance of 43 miles from Glacier House, the line descends through splendid scenery some 2,600 ft. to Revelstoke, where it again hits the Columbia River, which has made an immense curve around the Selkirk Range. That range is now left behind and the Gold Range entered on by the Eagle Pass, some 20 miles beyond which lies Sicamous Junction, our next stopping place. Ordinarily one would not pick out a Railway Junction as an ideal place for a lengthened stay, especially where the station and the only hotel are one building and there are no roads at all about the place. But if the front door of the Hotel opens on to the platform, its windows look directly on to one arm of the great Shuswap chain of Lakes, which octopus like send out their branches, 20 to 30 miles, in many directions, among the wildest of places full of wild creatures and visited only here and there by lumber men or sportsmen. It is a great fishing place, and we spent many an hour upon its waters, caught more than once by considerable storms. One Sunday morning, under a blazing sun, we pulled our boat into a little rocky bay. As we landed, a delicious perfume met us from bushes of red roses fragrant as our own garden ones. Just above ran the Railway Line, skirting the lake on its way to the Pacific, and above that the forest rose steeply, promising welcome shade, but with such a tangle of dead logs and wild undergrowth as made it difficult to find a comfortable camping ground. Around us were bushes bearing pure white flowers, the Thimbleberry, contrasting finely with the red roses. A magnificent orange and scarlet columbine glowed under the hot

sun, side by side with many another lovely flower. Very large butterflies, sulphur and black, chocolate and white, flitted around, and sky-blue dragon-flies shimmered past. The Lake slept peacefully at our feet, with here and there some water fowl splashing along it, or the swoop of a fish hawk breaking its surface. Across it some two miles away densely wooded hills rose to the height of a couple of thousand feet; away to the right another arm began its windings and passed out of sight. And the hot sun beat down, and the hum of many insects rose up, and from the woods behind came from time to time the strange call of a creature we could not name, till the solitude was broken by the roar of a great train thundering by at our feet, which passed and left a deeper peace. That was one of our great mornings.

From Sicamous a branch line runs south to the Okanagan Lake, our next destination—a line often exquisitely bordered with flowers, parterres of blue lupins and red roses, martagon lilies and pale purple sage, set in the tender green of young fern and backed by massive pine woods. Soon we begin to come in touch with less wild scenes, for it is a fertile country that is opened out by this line. Very interesting are the first rude houses in the clearings, with the rough snake fencing we saw so much of in far away Ontario.

In parts of British Columbia an important industry in fruit growing is rapidly springing up, which finds an expanding market in the new towns from Winnipeg to the Rocky Mountains. One centre of this industry is on the Okanagan Lake. It is a fine sheet of water some 60 miles in length, lying among lofty hills, away south of the main line and not very far from the American frontier. Several fertile valleys open down to it, at the mouth of one of which lies the little town of Kelowna. Kelowna may serve as a fair sample of the young town of Western Canada, though it has not gone ahead quite so fast as many do. With a population of some 800 only it is nevertheless a City, with a Mayor and all proper officials of its own, and even the beginnings of a public debt. One long wide street runs

inland from the Lake, with the beginnings of sundry others branching from it, streets all more or less unmade as yet, at least not made in our sense of the term, two moderate kind of hotels, a club, a bank, several excellent shops, and Churches of various denominations, Roman Catholic, Episcopalian, and a variety of Nonconformists. The Roman Catholics were first on the ground in their Mission to the Indians, which has given its name to the river—the Mission Creek. Fruit growing has for some time been an important, though not the only, industry in the level valley which stretches for some miles back from the town. Lately, however, it has taken a new development. At the point where the river leaves the hills it passes through a series of curious flat terraces, called "Benches," lying from 100 to 150 feet above its level, with a sharp descent to it. The surface of these bench lands, dotted freely in spring with sunflowers and covered with a sparse greyish-green vegetation, is not very promising, for the soil is not very deep and has in places many stones in it. It has, however, been found that under irrigation it is an excellent place for fruit trees, principally apples, cherries and peaches. Accordingly it has been cut up into lots of from 10 to 40 acres, now selling with water rights at £20 an acre, and is becoming rapidly covered with young trees. The water is brought some 4 or 5 miles from a point where the river is dammed and tapped as it issues from a rocky canyon in the mountain side. (See Fig. 3.) It is carried in a deep wooden trough open at the top, called a flume, for which when the nature of the ground permits an open ditch is substituted. Over the running water in this trough you can walk on 9-inch planking, rather loosely laid, and when this trough is carried over a valley of say 30 ft. in depth it forms a picturesque but somewhat dizzy kind of promenade. Once down on the Benches it is distributed through similar troughs to the various holdings and on them carried in temporary little ditches about among the trees. Life on the Bench was to us a novel and interesting experience. In one of the little wooden houses which are dotted about it we took up our abode. The main portion is a single room 16 feet by

12, to which was added in anticipation of our visit the flat-roofed kitchen 8 feet by 12, and the verandah, where you can take your meals in good weather and wash up afterwards. The adjoining tent became a bedroom during our visit, and beyond it lies a woodshed. Further off is a little stable. We spent a



Fig. 3. "Head of the Flume, Kelowna."

delightful week there, and I could talk for a long time about the interest of such an experience, but must stop only to warn you against supposing that it involved to us visitors any hardship or discomfort. For all was made delightful and easy for us, and a most kind hospitality was extended to us by the many acquaintances we made. As one lies awake at home at night listening

to the railway whistling and shunting, one longs for the sweet air and the peaceful quiet, broken only by an occasional howl of the wolves, that we experienced on the Benches. But profoundly interesting as it is to see the beginnings of things in such places, there is no doubt that it calls for much hard work and patient endurance on the part of the settlers.

The lonely bachelor in his Shack has to learn to do pretty nearly everything for himself. He must know how to build his own house, to manage his horse—if he has one,—to cultivate his land and prune his trees, to cook his food, and if he is to have any comfort at all to do a hundred little things for which at home he would depend upon others. The resourcefulness which men develop under such circumstances was a continual astonishment to me, in marked contrast with the narrowly specialised lines on which most of us live in this country. The bachelor is not, however, always alone. Along with the hard work there is much genuine sociability, and even the bachelor's shack can upon occasion rise to the height of an afternoon tea, when not only ladies but babies also are much in evidence. You will find delicate young married ladies out there upon whom life comes even harder than on the men. They can get little or no assistance either in household work or nursing, so that where they go the baby must go along too. I remember well the home of one of these ladies, where she lived alone with her husband and baby, a small wooden house of three or four rooms, very nicely kept, where we were entertained at a very pleasant evening meal cooked by herself with the baby to mind and the house to make presentable. Loneliness and sociability, hard work and eager sport, a certain necessary roughness, and a very distinct clinging to the refinements of life, a very democratic equality and an abounding hospitality, all these are elements in our recollection of life at Kelowna and on the Benches.

It was night when we set forth once more from Sicamous on our way through the confused coast Ranges towards the Pacific. A tiring night, with little rest and many dreams, for we had no proper sleeping accommodation that time, but as

light begins at last to grow is it dream or reality that breaks upon tired eyes? How many hundreds of feet, and how awfully steeply down below that swollen stream rushes so swiftly towards the sea! How short a distance across it and to what soaring heights above us rise those rocky walls and inaccessible slopes, dull white against the sky! What a mad nightmare of a railway writhing down such a wild valley, clinging to its almost perpendicular sides, winding and twisting around their rugged rocks and slippery scree, vaulting their ravines and waterfalls! How soon will this mad dream end in one big plunge down to those boiling waters, and—but more light comes and greater wakefulness, and we recognise that it is no dream but the great canyon of the Thompson River in one of its wildest parts and seen in an unusually weird, uncanny light. So one wrote with the impression still fresh and with the usual inadequacy of description, at once exaggerated and insufficient. Soon the sun struck in, and as hour after hour we wound down towards the sea, and the Fraser canyon succeeded to the Thompson, new elements of beauty and interest were added to the ever changing scene. There high above—in places it is said 1,000 ft. above the river, crawled and clung along the face of the rock, the remains of the old Voyageur's track. Far below one saw perched on little promontories Indian villages or burial grounds. Here and there an Indian Fishing station, slight structure of branches and boughs, overhung the boiling waters. Large bushes of pure white *Syringa* in full bloom or masses of pink and white spireas added grace to the savageness of the scene. But you have all read about the canyons, and I desist. We saw them again on our return under other conditions, in full, quivering, blazing sunlight, very beautiful and grand, but it needs the dim light of early morning to bring out their full significance of suggestion.

We never got to the coast, for we were caught and held fast in what we fondly call our Dreamland, the dreamland of the Harrison River, a tributary of the Fraser, which it joins about 60 miles from the Pacific.

It is a dream of leaving the noisy railway and being slowly

rowed, one hot June morning, some miles up a broad green stream, across a shallow bay into which the stream expands, with no sign of house or home ahead; only a great wood backed by lofty cliffs to which the trees cling till they are baulked by absolute precipice: of entering a narrow shallow creek of marvellously clear water and winding with it slowly in and out among low woods and flowering shrubs; of landing at last just as the creek seems coming to an end; of a few steps through the wood into a clearing still dotted with monstrous blackened stumps waiting to be finally dynamited out; of a garden patch at the end of this and a picturesque wooden house beyond; of forest ringing round it all and mountain rising steeply up behind. Truly a house beautiful, all wood save plastered walls and ceilings, with shaded balconies and cool sitting rooms carpeted only with skins of bear and wild cat shot close about it, restful bedrooms and even a bathroom—a charming house built almost entirely by the Canadian owner and his Swedish foreman, with the river for its highway flowing by. A dream of a most kindly welcome—of a hostess bright and indefatigable, cooking excellent meals for us, bringing them in and then presiding over our table as she shares them with us, full of conversation, fun, and interest in us, most cheery of hard-working little women. Of a host who in his time has set himself to many tasks and now faces the reduction of 1,200 acres of forest into the order of a home, a resourceful man full of wonderful stories of fishing and hunting and forest craft.

It is a dream of great trees, soaring above us for 250 even 300 ft. Cedars, Douglas Firs and Pines, exquisitely beautiful in life, grand but rather sad in death; of fallen monsters whose great boles as they lay on the ground, white and shining in places where the bark had shaled away, rose well above our heads. Of soft thick coating mosses inches deep on their trunks and lichens trailing from their lofty boughs: of lesser trees, Maples and Cottonwoods attaining perhaps only a poor 150 ft. Of a trail winding away for miles through such a forest, fair with many lovely ferns, and here and there the sunlight

breaking across the deep shade: of the solemnness, and beauty, and grandeur of such a forest, and of late evening wanderings in it.

It is a dream of floating hour after hour upon the swirling rapids of the river, skilfully piloted by Auguste, most taciturn but reliable of Indians: of the trout and salmon captured there—also of those not caught: of the great Fish Hawks and Cranes that floated round those waters, and of snowy ranges closing up the distant views. Of one morning up the River when, owing to some strange effect of light, the hills through which its bright green flood came pouring down seemed altogether unsubstantial and translucent, gateways of a mysterious world: of passing up towards them by an Indian Village, and watching the Indians come and go in their light boats, using sail and oar, pole and paddle, with equal skill: of one boatload of them gay in the brightest of red and yellow garments floating down the green waters.

A dream of leaving the river and pushing up an old trail, with visions of the "braves" who might have passed that way in years gone by, where giant brackens and young cedar growths swept our faces and tangled above our heads, leading to a wonderful Lake—Garden Lake.—a blue sheet under sunlit cliffs, ringed round with noble living trees, backed by an army of the whitened stems of Monarchs long since dead, which glowed almost fiercely in the tremendous sun: of a midday heat and silence there, broken only by the slow drumming of the grouse. (See Fig. 4.)

Another river there was the sweet named Chibalis, that ran a fierce course through the woods with a dozen boiling rapids in it, from its rocky canyon in the hills down to the main stream, and we still dream of a Sunday when the whole household adjourned for dinner on its banks and were shown the cunning Indian fishing places. Greatest joy of all perhaps—of being slowly poled by our Indian friend in a small and seatless dug-out canoe up that wild river to the Canyon in the hills, and then

shooting the rapids in a wild rush of descent to the calm waters below.

It is here that in autumn the salmon die by thousands in the creeks, and the bears come down in numbers from the mountains to feed on them; here that we came a little into touch with the Indians and looked some of them up in their encampment on the river side and heard a good deal of their life and ways,



Fig. 4. "Garden Lake, Harrison River."

here that not even an hotel nor a road, nor a railway was at hand to remind us of our normal life. Perhaps you will understand why we lingered in our dreamland and did not press on to the City of Vancouver.

We moved east again to the Rockies and took up our quarters at Field in the Kicking Horse Valley. The little village lies along the line at the foot of Mt. Stephen, a noble precipitous mountain which rises some 7,000 feet above the

valley level. It is faced on the other side of the Valley by peaks somewhat less lofty but clothed for 3,000 ft. up by dense forests. The wild pass of the Kicking Horse, leading to the Great Divide, faces us up the stream, and downwards the serrated Vanhorne Range closes the view. It is a great place, and its luxurious hotel makes it a most comfortable one to stay in. A place great also in its profusion of lovely flowers, Lilies and Roses, Columbines, Purple Gentians and Honeysuckle, exquisite Orchids and Pyrolas. These are but a few of the beauties which it is so delightful to meet with in this savage-looking valley, and which you may freely gather as you stroll alongside the milky glacier-fed stream, till perhaps you come full in front of the pinnacles of Cathedral Mountain, towering above the nearer hills. There is at once a special charm and provocation about flower hunting in the Rockies, for there is as yet no book to guide you to the names, new varieties—even, we are told, new species—are constantly being found. We were especially fortunate in meeting here with Madam Schaefer (a lady who is a great authority on the subject, and is engaged on a work illustrating the flora of the district), and in being allowed to assist her one day in gathering specimens. So please in your imaginations add to this wild scenery an exquisite carpeting of lovely flowers. If any of you know and love, as those who know it must, the *Linnea Borealis*, think of it as being here in extraordinary profusion, clothing the stones and dead logs about the edge of the woods with its dainty foliage and lovely pink bells. Notwithstanding that you have here a railway and an hotel you may judge how thin is the veneer of civilization in these parts, from the fact told us by Madam Schaefer that in her expeditions hence last year she discovered seven new lakes.

It was from Field that we made the great excursion of our tour, full of, to us, quite novel experiences. Away to the south, over the range that faces Mt. Stephen, lies the celebrated Yoho Valley. To see it properly requires three days at least, and means covering a distance which I estimate at about 60 miles. I say estimate, for the country is not yet properly surveyed, and

I could get no map of it. For the first seven miles out of Field to an outlying Chalet Hotel on the Emerald Lake, so called from its marvellous colour, there is a road through the forest on which you may drive. After that there is neither road to drive on nor house to sleep in, and one has, in spite of years and ignorance, to get oneself on horseback and trust to luck to stick there. Please therefore to imagine our cavalcade as it started from the Emerald Lake on a morning, alas, too wet to be altogether pleasant. First our Guide, a most excellent young Englishman, courteous and gentlemanly, ready for anything from cooking to managing four lively horses at a time: with his axe and rifle, for there is always a chance of some big game in the Yoho. Managing his own steed with one hand he leads the heavily laden pack horse by the other. Then follows the lady of the party, then on the fourth your rapidly stiffening lecturer. It was not long before a new joy in flowers gave a sufficient excuse for dismounting, for the level land at the head of the Lake was studded with lovely yellow *Cypripediums*. Then we slowly climbed the rock wall, that closes the Emerald Valley, by a rough and devious track alongside a raging mountain stream. Then through a gloomy high-lying forest out on to the eastern side of the Yoho Valley and high up above it. The trail here runs close along under the Glaciers which crown the Valley side, fording the ice-cold streams that flow from them and along slippery screes. And still alas! it rained. Far across the deep Valley we could see dim outlines of great mountains, and the glimmer of white snow fields, and hear the thunder of a great waterfall booming in the distance. Wet as we were, I think we really had only one regret, that it was not possible to indulge the growing mania for photography. It was all too novel and exciting to take account of small discomforts, and when towards evening the weather began to clear and we reached our first camp we were indeed as wet as you please, but in excellent spirits.

I should say here that as soon as the melting snows permit, two camps are pitched in the Valley and remain for the use of

visitors during the summer. We were the first to make use of this one.

It lies on a heathery knoll among spruce firs, about 6,000 ft. above sea level. On the one side a tiny green Lake, on the other a sharp descent of some hundreds of feet to the Laughing Falls Creek which makes continual music on its way to the Valley below. Through the trees in front are glimpses of a fine glacier set in white peaks among the lifting clouds. Three white tents stand pitched among the trees, all fresh and clean but undeniably damp. The horses are unsaddled and turned loose, the stores, saddles and trappings piled in safety from the too curious porcupines, wood is gathered, and a young tree cut down. Soon a noble fire is blazing between the tents, such limited change of clothing as is possible made, wet things hung in the smoke to dry, and the business of cooking commenced. It would take too long to tell of that grand dinner, which ranged from soup to dessert, laid on a white cloth spread on the ground in one tent, of the quantities of white heather and pink calima that blossomed around us, of the coming on of the darkness in that lonely place, as we piled up the logs and rejoiced in the glorious crackling fire, till we betook ourselves to our beds in another tent: beds consisting of red blankets spread upon pine twigs, warm and comfortable, with even the unusual luxury of sheets sent specially for our benefit and aired, more or less, by the fire; of the falling asleep to the sound of many waters.

Though it treated us to a snow storm at our early breakfast, the weather mended next day and became perfect on the third, but I cannot go through them in detail. Let me take you to the scene of our midday halt next day, passing *en route* the lovely little Shadow Lake. For the most part we rode through forest descending to the head of the valley and then up to the great glacier which closes it in. Among the woods that reach almost to the ice we built a fire, for there were little snow and hail-storms about, and the wind came cold off the ice fields. Our guide was soon busy at his cooking, my wife with her back to a tree was making the most of the fire, and the horses tethered

behind. It is astonishing how quickly the expert gets a fire going and water boiling in any weather. And then came glorious sunshine and a few steps from the fireside placed us in full view of the Yoho Glacier with Mt. Gordon rising behind it and the great crevasses shining bright and blue. It was very unwillingly that we turned our backs on this scene and plunged once more into the forest.

It is a wonderful valley with noble precipices and fine waterfalls, dense forests giving on to shining glaciers, white peaks above and rushing water below. A valley without a trace of cultivation, without a house and without a road. From the Thursday morning when we entered to the Saturday afternoon when we left it we did not meet any one. But it has a trail that carelessly traverses slippery slopes, that sometimes condescends to cross water by rough wooden bridges and at others prefers the simpler plan of going straight through it: that winds for hours among the woods—a black streak inches deep in decaying vegetation and blocked with boulders and fallen trees, where the pedestrian is glad to pocket his pride and get on horseback: that takes no account of steepness till you feel that but for the Mexican saddle you must slip over your horse's head. Never wide enough for two abreast, it takes a special delight in contracting itself in the steepest places, where you are mistakenly apt to imagine that you would be more safe on your own feet, than on those of your horse, which send the loose stones rattling far below.

Our second camp was pitched near the foot of the great Takakaw Fall. Takakaw is Indian for "it is beautiful," and beautiful it really is with its plunge of 1,200 ft., though as we saw it, it was, owing to cold weather, not so full as usual. Not easily shall we forget that night when we sat by the fire till the stars came out and listened to its rhythmic roar, nor the next perfect morning when in the crisp air we waited till the bright sunshine fell upon it to take one more picture. That morning was the beginning of a long and memorable day of perfect weather and glorious views. You need to linger and pick your

point of view, more than was possible to us, and when you have to tumble off your horse, take a picture and scramble on again, you do not always find time to make the best choice. I did try to operate on horseback, but as I knew even less about riding than photography I did not repeat the experiment, and the result has not been preserved.

We left the Yoho Valley by the Burgess Pass which descends directly on to Field. I do not think I have ever been in a more



Fig. 5. "Mount Stephen, from Burgess Pass."

wonderfully beautiful place. It is only some 7,000 ft. high, but commands extraordinary views. Looking back in the direction whence we had come, we had on the right the rocky summit of Mt. Wapta, and in the centre the magnificent mass of the Vice-President with its hollows filled with glaciers and crowned with snow. The dip in front goes steeply down nearly 3,000 ft. to the Emerald Lake, while to the left more distant ranges complete a magnificent panorama. This side of the Pass alone is

sufficient to make for it a great reputation, but if you turn around and walk but a few steps across the heather and golden lilies which are all about you, you come full in view of Mt. Stephen, from his rocky base, by his glacier-swept shoulder, to his snowy top, framed in a setting of dark pines. Three thousand feet below, at the foot of the mountain, lies Field, with its white stream and houses, which look like toys; away down the valley is a long perspective of noble peaks, above you a cloudless sky and brilliant sun, at your feet dense masses of forest clothing the steep descent. Such was the scene which closed our excursion. (See Fig. 5.)

Near the point where the rail crosses the watershed of the Rockies lie a number of very beautiful lakes bedded in the mountains. The best known and much advertised of these go by the somewhat fanciful name of the Lakes in the Clouds, a series of three lying one above the other. The lowest of them is Lake Louise. The water is of an extraordinary bright-green colour, which contrasts wonderfully with the snow fields of Mt. Victoria which fill in the background. It must have been a grand wild place not long ago, but a great hotel now stands on its shores and a constant stream of visitors pervades the place. It forms a picture almost unnatural in its balance and combination of effects and colour, green water, grey rocks, dark pines and white snow. From its head you get a fine view of Mt. Lefroy, and pushing but a little way up the valley beyond, you come quickly to the foot of a great glacier. It is eminently a place to be idle in, for luxury has got hold of it, and newly married couples are much in evidence there. You resign yourself to floating about on its green waters, with their marvellous reflection, in a lazy manner of which one is disposed to be a little ashamed afterwards.

Pushing up through the woods, on the right—woods much haunted by mosquitoes and their allies—for the Upper Lakes, we get some very fine near and distant views. The highest of the three Lakes—Lake Agnes—lies some 1,500 ft. up and is reached by an easy path. Around its shores the snow was still

plentifully lying at the foot of some noble crags. I think that after the novel experience of the Yoho Valley we found even these lovely Lakes with their grand hotel just a little tame, and were not sorry to make one more little plunge into the wilds to visit the great Valley of the Ten Peaks. Eleven miles of roughish riding from Lake Louise brought us to it, and a very striking piece of scenery it is. Here too is another wonderful sheet of



Fig. 6. "Moraine Lake."

green water, Moraine Lake, which we had all to ourselves, after we had tethered our horses on its lonely shore and left our Guide sleeping beside them. (See Fig. 6.) First along a kind of a trail by the water side, then through a wilderness of swamp and rock, fallen trees and dense scrub, we pushed our way to the head of the Lake, and out into the wild Valley beyond, once more all alone, with no sounds but the call of strange birds, and the thunder of avalanches from the great peaks. And here we stop, for some accident during this expedition injured my camera, and though

we had one other great day, when from the top of Mt. Fairview, 4,000 ft. above Lake Louise, we revelled for two short hours in a most marvellous view, in which glaciers and snow fields close at hand on one side, the great Bow valley stretching at our feet with a forest fire raging in the east, and range upon range of mountains away to the north, all found a place and made one splendid whole, yet my pictures are, alas! all failures, and my pen totally inadequate to describe it. Still I am not sure that anything would have been more characteristic than this scene at the head of Moraine Lake, which I think conveys some suggestion of the wildness, the loneliness and the grandeur which impressed one so much among these splendid mountains.

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Review.

"Geological Atlas of Great Britain and Ireland." By Horace B Woodward, F.R.S., F.G.S. London: E. Stanford. 12s. 6d. net.

This is an excellent book and well worth a place in the reading matter carried by the tourist or travelling commercial gentleman.

The Geological Maps are splendidly got up and amplified by marginal notes on interesting finds together with a Key connection showing the Old and New Ordnance maps of the same area. The Plates showing the fossils are excellent in every way.

The general plan of the book is good. A geological survey of the structure of Great Britain is first given with illustrative sectional maps. The rock formations are then treated and notes on fossils are added to many of the classes; these notes show the locality and give the number of the plate on which the particular fossils appear. The mineral products are placed after this section in Alphabetical order and a description of their characteristics and place of occurrence is given with each.

The counties are next treated in detail in such a way that the reader is interested in the rocks, minerals, fossils, animal remains etc. and reads with pleasure the detailed geological matter here brought before his notice. It even tells in this section the kind of coast line, rocky, sandy, or shingly at various seaside resorts of the maritime counties.

The last section of the reading matter is a noticeable feature of the book and describes the geological features to be seen along the main lines of railway. It is a very readable portion and is not loaded up with detail. An index is given and the last half of the book is taken up with the maps and plates which I cannot speak too highly of. The publishers and the author are to be congratulated on the production of this book.

J. H. B.

THE RELATION BETWEEN THE GEOGRAPHICAL
POSITION AND THE PRODUCTIVE CAPACITY OF
LAND.

By EDWARD J. RUSSELL, D.Sc. (Lond.)
(South-Eastern Agricultural College, Wye).

(Addressed to the Society, in the Geographical Hall, on Tuesday,
February 19th, 1907, and revised to date.)

THE productive capacity of land may be described in general terms as its power to produce a good and profitable crop in response to proper cultural and manurial treatment. It is a complex quantity, depending on many factors, among which the chemical composition of the soil, its physical structure, the micro-organisms present, and the geographical position of the land, are all of fundamental significance.

In its widest sense, the relationship between geographical position and productive capacity, with which it is proposed to deal in this paper, also includes the relationship between geographical position and climate, but as this latter belongs to another subject it will not be dealt with here. Nor is it proposed to discuss the effect of distance from market or railway on the rent of land for agricultural purposes, since this is not essentially different from the parallel case where land is wanted for manufacturing purposes. Proximity to a market is an important consideration, but proximity to a through route is perhaps equally important. The Kent fruit grower who has prices wired or telephoned down to him will sometimes find it more profitable to send his fruit to Manchester than to London, while a south coast watering place may be better than either. There is some advantage in being near a waterway. The high-class farmer in the home counties buys, if he can, a good deal of bulky refuse matter from London—stable manure,

street sweepings, etc.—and it is an obvious advantage to have this barged out. If he is near the rail the cost will be greater, but may still leave him a profit, while if he is far from the rail the cost of cartage is so heavy as to be quite prohibitive.

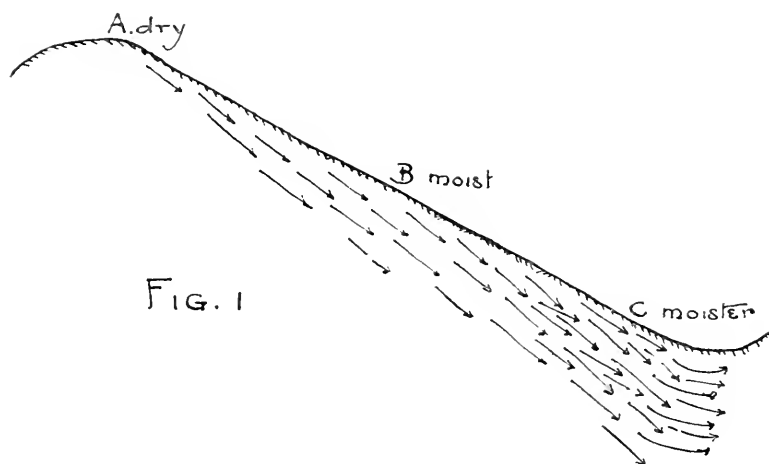
In this paper we are concerned more particularly with the effect of aspect, elevation, slope and similar factors on the productiveness of land. The illustrations are drawn mainly from Kent and Surrey, and have been gathered in the course of the writer's work at the Wye Agricultural College. There is no need to go into the complex question as to what constitutes productiveness in land, it is sufficient for the present purpose to note that no land can be productive unless it has a sufficient, but not excessive water supply, suitable temperature, and shelter from excessive wind. These are the three headings under which the subject may be arranged.

EFFECT OF THE POSITION OF LAND ON ITS WATER SUPPLY.

When rain falls on the surface of the earth, a certain amount soaks in and travels downwards, but some follows the slope of the land and comes out again at a lower level. The highest land receives only the rain which actually falls upon it, the lower land not only receives its own proper rainfall but also some of the water which has soaked through from above. At the bottom of the slope the water supply is at its highest, and according to the position of the water level we shall find a river, a marsh, or moist productive land. The direction of this underground flow is shown by the arrows in Fig. 1, they have been put in in larger number at the lower levels to indicate the increasing amount of water present.

The effect on productiveness depends somewhat on the nature of the soil, and is shown to a marked extent on light sandy or chalky soils, which readily allow water to run through, and have very little power of retaining it. On the highest land the water supply is irregular; it is ample whilst rain is actually falling, but may become very deficient shortly afterwards as a result of excessive drainage. Such variations in the water supply are

not conducive to the growth of any plants, and are not tolerated by ordinary farm crops, and in consequence this higher land is often left uncultivated either as pasture or as wood, some of it indeed has never been enclosed and has always been common. Hayes and Keston commons in Kent, Leith Hill, Oxshott, and Hindhead in Surrey, are all good instances: from the agricultural point of view they can only be regarded as waste land, however much one may admire the pine and fir trees, the



bracken and the heather they produce. It is perhaps not too much to say that the existence of wild romantic regions in counties which, like Kent and Surrey, have been highly farmed for many years, is mainly due to unsuitability of the water supply. Fig. 2, taken by Mr. R. H. Carter in Oxshott Wood, is typical of much of this high lying land in Kent and Surrey.

Another example is furnished by the North Downs and the South Downs: where they are not capped with clay the higher parts are often too dry to allow of profitable cultivation, though the chalk soil, being cool in summer, furnishes healthy, if rather scanty, grazing for sheep.

On a small scale the same effect can often be seen in sandy fields; if one part lies higher than the rest it has a smaller supply of water and is less likely to be productive. The heavier

type of soil technically known as loam does not normally show this difference, but in times of drought the higher places suffer sooner than the lower ones.

Coming now to the lower land marked *B* in Fig. 1, this receives, as already mentioned, some of the water which has soaked through from above in addition to its own share of rainfall. The soaking process is slow, and makes itself felt for some time after the rain has ceased: in suitable circumstances



Photo by R. H. Carter.

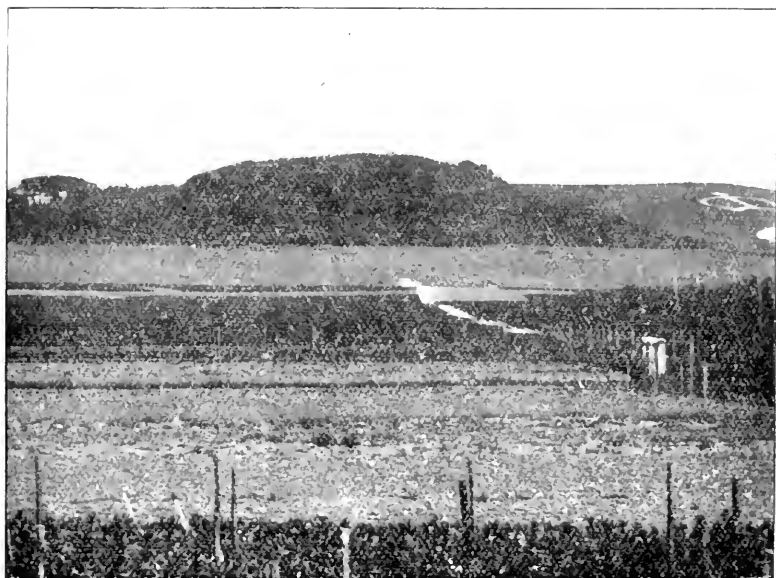
Fig. 2. Coombe Woods, Wimbledon. High land running wild because the water supply is too irregular for cultivation.

the land may not dry out at all. This condition is eminently favourable to vegetation, and ordinary farm crops, fruit, and hops, may all be grown, in fact some of the most productive land in Kent and Surrey is found on slopes of this kind.

Water soaking through from above is more than pure water, it has in passing through the soil dissolved a certain amount of

mineral matter—sometimes as much as 0·1 per cent.—part of which is valuable plant food. The process constitutes a natural subirrigation, and is particularly effective where the physical texture of the soil allows water to be drawn up to the roots as quickly as required.

Fig. 3, taken at Wye, shows very clearly the gradual transi-



Phot. by R. H. C. C. C.

Fig. 3. Coldharbour Farm and Downs, Wye. Improvement in land in passing down a slope, due to increased water supply. The high land is dry, and is only wood and poor pasture, lower down (below the white hut at the top of the road) the land is better, and lower still fruit can be grown. The dark strip of land in the middle is ploughed, the light part above is poor grass, and the light part below is producing market garden crops.

tion from unfavourable to favourable condition of water supply in travelling down a slope. The highest ground is of very little value, it can only be used for poor pasture or for plantations, a little lower down cultivation becomes possible and farm crops appear, still lower down the conditions are so improved that

expensive crops like hops and fruit are possible, and in the bottom of the view a corner of a fruit garden is seen.

At the bottom of the slope (*C*, Fig. 1) the water supply is at its highest, and the productiveness of the soil depends on the water level. Wherever this is near, but below the surface, the land will probably be very fertile even though the soil has so little depth that, on the level, it would be unproductive. The little valleys in the chalk downs and on the sandstone hills of the south-eastern counties are often cultivated, while the higher

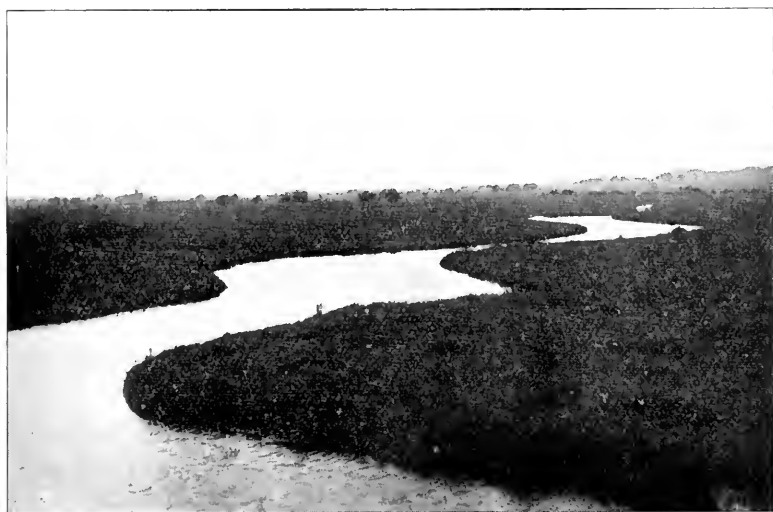


Photo by R. H. Carter.

Fig. 4. The Stour, Wye. Marsh land, excessive water supply.

part lies barren, and even where the valley is too small to make cultivation profitable the grass has a fresher and greener colour than elsewhere.

If the water level rises to the surface the soil becomes waterlogged and a marsh is formed which is quite unsuited for cultivation of ordinary crops, though special crops like osiers may do well. A luxurious growth of grass is commonly produced in summer time, and marsh land is, for that reason, very useful for

hay and for sheep and cattle, notwithstanding the fact that it is unhealthy unless drained. Fig. 4 shows a typical marsh scene.

One effect of rain on a slope is to wash the finest soil particles, the silt and clay, downwards, and in the course of ages the valley receives so much of these that the nature of its soil changes, the texture becomes finer, and there is a better power of retaining water. In consequence, the effects now under discussion are intensified. The proverbial fertility of valleys may therefore be ascribed to three causes: the percolation of water, the transference of soluble matter from the higher to the lower ground, and the downwash of fine soil particles. The higher ground is slowly but continuously impoverished, while the lower tends to gain in productiveness. The general rule is that the highest ground forms poor pasture or woodland, almost useless for agricultural purposes though often affording very beautiful scenery; lower down cultivation becomes profitable, and valuable crops may be grown, whilst at the bottom of the slope the land may either be very fertile or marshy, according to the position of the water table. The scenery on the lower slopes is generally distinctly pastoral in type.

In applying the rule it must always be remembered that too much water is just as fatal to plant growth as too little. If the bottom land is marshy it will not permit the growth of ordinary crops. A wet clay soil may, for the same reason, show a reversal of the order given above, the ridges and banks being fertile and the bottoms infertile. It sometimes happens, also, that the transference of soluble matter from the higher to the lower ground leads to an excessive accumulation of salts in the soil, fatal to plant growth. This effect is rare in England, but is not uncommon in California, where the summers are drier than ours, and evaporation from the soil is greater. Hilgard¹ states that considerable damage is done by irrigation water soaking from the higher ground into the valleys; orchards and vineyards have sickened and died, and land which naturally

1. Soils, p. 230.

produced most luxurious crops has been ruined through improper irrigation of higher land. "Extensive areas of lands which, when first irrigated, were among the most productive, have in the course of eight or ten years become almost valueless to their owners, to whom legislation thus far affords but distant promise of relief: although the case seems in equity to fall clearly within the limits of the laws governing trespass."¹

These cases do not in reality constitute exceptions to the general rule, they are only the results of the extreme effects which may be produced under special circumstances. Complications are introduced if a stratum of impermeable clay or rock crops out somewhere on the slope, but the same fundamental principles hold.

EFFECT OF WIND.

Wind has a considerable effect both on the soil and on the crop, consequently land subject to strong gales is not well adapted to crop production. The tops of hills are often barren. Cultivation is often restricted on the coast to sheltered situations, the more exposed places of necessity lying waste; exceptions frequently occur where the coast land is not too high. Thanet and Romney marsh in Kent, and parts of Lincolnshire are extremely fertile, though much wind swept.

Where the wind is less severe its effect may be simply to reduce and retard the crop; the result depends on the temperature and velocity of the wind and the season at which it appears, but generally speaking a north or north-east wind is more serious than one from the south, because it causes a lowering of temperature in addition to its bruising effect on the foliage. Land sheltered from the north may be expected to produce earlier crops than more exposed land.

EFFECT OF POSITION OF LAND ON ITS TEMPERATURE.

The influence of elevation. As a rule the higher one ascends the lower becomes the temperature, and above a certain height the general coldness, together with the liability to strong winds,

1. *Ibidem*, p. 231.

produce so adverse an effect on plant life that most crops suffer, and some will not grow at all. The older agriculturalists considered 500 ft. to be the limit for the cultivation of wheat and 600 to 800 for barley, but with modern methods of cultivation and management these figures could be exceeded. It is generally supposed in Kent that hops cannot be produced on ground lying 500 ft. above sea level, and certainly they are not. Hazel nuts are grown at this height and constitute a valuable crop, but as a rule this high land is either wood or waste even where the soil is good and of such a nature that the water supply is satisfactory.

The rule requires some modification when the elevation is not too high. Comparing two stations, one situated in the valley, and the other 200 ft. or more up the slope, the lower one is hotter by day, but almost equally cold, sometimes, in fact, colder, by night. Observations along such a slope, about one mile in length, on the farm of the Wye Agricultural College, bring out very clearly the fact that the temperature fluctuations in the valley are much greater than those above.

TABLE I.

Average temperatures, 14th April to 11th May, 1907.

	Top station.		Bottom station.
	Altitude.		Altitude.
Maximum	57.1°	.....	61.8°
Minimum	38.2°	.....	35.9°
Total variation.....	18.9°	.....	25.9°

Difference in maximum readings 4.7°.

Difference in minimum readings 2.3°.

It is more especially when there is no wind and few clouds that the minimum temperature is lower in the valley than on the higher ground. The cause of this is well understood. On a clear night radiation from the earth is unchecked and the temperature falls; the layer of air near the ground is cooled, it

increases in density and tends to roll down the slope and collect in the valleys. Here it displaces the warm air, which, being lighter, rises and flows over the upper slopes from whence the cold air has come, keeping these slopes at a higher temperature than the lower ones. In Fig. 5 the short thin arrows indicate the downward drift and accumulation of the cold air, and the long thick ones show the upward movement of the warm air; the results of the Wye measurements are given in Table 2.

TABLE II.

Average minimum temperatures, still clear nights only,
April and May, 1907.

Top station	38.2°
Bottom station	32.6°
Excess at top station	<hr/> 5.6°

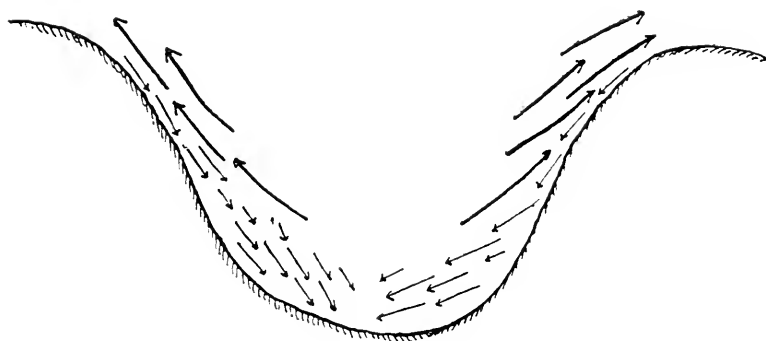


FIG. 5

On these clear nights the bottom station was considerably colder than the higher one, the average difference in temperature being 5.6°F.

The case is a little more complex if a river flows through the valley, for it is then found that the air is warmer on the bank than further off. Readings taken at Wye show this clearly.

TABLE III.

Average temperatures all nights, 14th April to 11th May, 1907.

	Brink of river.			66 yards away.		
Station	7	...	8	...	6	
Minimum	38·1°F.	...	37·2°F.	...	35·9°F.	
Excess over 6	2·9°F.	...	1·3°F.	...	—	

Station 7 is situated at the junction of the river with a stream, and station 8 is on the straight bank of the river; the protection is naturally greater in the former than in the latter case.

For still nights only the temperature difference is very much the same (see Table 4). This protective influence increases with the width of the river and is greater at a bend than on a straight stretch, it may be attributed either to the favourable influence of a mass of water on the temperature, or to the drift of air consequent on the flow of the river: probably both causes operate.

These various temperature relationships are summarised in Table 4, which gives the average minimum readings at all the stations on the slope from 14th April to 11th May, 1907.

TABLE IV.

			Min'm. Temp.	Min'm. Temp.		
Height above			Average of all	Average of still		
sea level.			nights.	nights only.		
Station No.	Feet.		Ground.	Ground.		
1	...	675·71	...	38·2	...	38·2
2	...	285·84	...	37·8	...	37·4
3	...	232·84	...	38·0	...	37·5
4	...	174·87	...	—	...	37·0
5	...	119·84	...	36·8	...	34·6
6	...	97·49	...	35·9	...	32·6
7	...	95·02	...	38·1	...	35·45
8	...	97·46	...	37·2	...	34·1

It is highly desirable that these determinations should be repeated in other districts, and also that soil temperature readings should be taken at various altitudes.

A little consideration will show that for tender crops land round stations 3, 4, or 5 is more valuable than land either higher up or lower down; 1 and 2 suffer from a defective water supply, and 6 from larger temperature fluctuations and greater degree of cold. If the mass of water is great the protected strip along its edge may be wide enough for cultivation, forming a belt of land more valuable than that round 6. This difference is of great practical importance in late spring and in early autumn, when the temperature at night sinks to near the freezing point on the higher ground: it often falls below it on the lower ground.

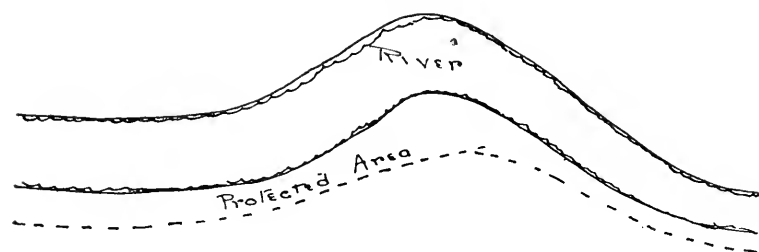
One of the worst accidents that can happen to a fruit grower is a frost coming after the blossom is out and before it has set: during this period such a frost may in a couple of hours do hundreds of pounds worth of damage in a fruit district. Early potatoes are also liable to suffer, the tender shoots which come through in April and May are very sensitive to frost. Low-lying land is usually avoided for both these crops, and higher land used instead.

The protective influence of a mass of water is well seen along the North Kent coast. The Isle of Grain is less liable to frost, and therefore more suited to early potatoes, than the Hundred of Hoo, situated a little further from the water.¹ Fruit close to the coast suffers less than that a little inland. It is noticed in Worcestershire that strips of gardens within 50 yards of the river Avon suffer less than gardens at a greater distance, whilst in California the influence of a river is so well recognised that land along the bank, and particularly at a bend, where, of

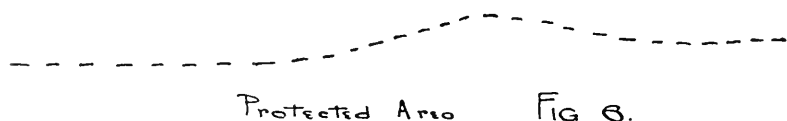
1. It is said that the difference was formerly greater than it is now, but I cannot give any explanation of the change, if it has occurred. The difference is most striking if there is an East or North-East wind coming off the sea; if the wind is North or North-West the difference is less.

course, the effect is intensified, is said to be of higher value than land elsewhere.

Fig. 6 shows diagrammatically the area subject to late frosts coming in between two areas not so liable to them; it would be avoided for fruit and potatoes, the crops most liable to suffer from late spring frosts, but would be quite useful for ordinary farm crops and for hops which are not injured by such frosts, in fact owing to its higher water supply it would probably be most



Subject to late Spring and early Autumn frosts



Protected Area FIG 6.

valuable for these crops. We can thus understand and justify the Kent saying:

“Grow hops in the valley, fruit on the hill.”

The early autumn frosts are not of as great practical importance as those of spring, but the effects can be well seen in flower gardens. The dahlias were last autumn killed in a garden level with station 4 on October 12th, whilst those in a garden level with station 2 lived till October 22nd.

Influence of aspect. It is a matter of common experience that a south slope is warmer than a north slope, and in summer time the difference in temperature is often very marked even

when the difference in slope is not great. This effect is partly due to the shelter afforded from cold north winds, partly to the longer hours of sunshine, but mainly to the fact that the sun's rays are spread over a smaller area, and so exert a greater heating effect, on the south than on the north side. Temperature readings at Wye, taken during several days in August, 1906, on an artificial mound sloping slightly to the north and the south, gave as averages :

North side.	South side.	Excess on south side.
66°	70°	4°
The readings were taken at noon.		

On a south slope plants begin to grow early in the spring, they make rapid progress throughout the season, and as the soil becomes dryer they ripen and are ready for market some days or even weeks before those grown on a north slope. Early crops command a higher price than late ones, provided they do not come before the public is ready to buy, but as the days go on the price falls very rapidly. Table 5 shows this progressive drop in the price of strawberries and of potatoes, two crops which are affected very much in this way.

TABLE V.

Progressive fall in price of strawberries.

Covent Garden average 1901—6.

June 1st week...	...	...	...	1s. to 1s. 6d. per lb.
„ 2nd „	...	...	...	8d. to 10d. „
„ 3rd „	...	...	...	4d. to 6d. „
„ 4th „	...	...	...	3d. to 4d. „
July 1st „	...	...	...	1½d. to 2d. „

Special qualities during July commanded a higher price.

The prices of Jersey potatoes during the 1906 season were :

		s.	d.	
April 30th...	...	26	9	per cent.
May 2nd	...	27	6	„
„ 4th...	...	20	0	„
„ 7th...	...	20	0	„
„ 9th...	...	18	9	„
„ 10th...	...	16	10	„
„ 12th...	...	14	4	„

English potatoes come in later, but their price falls in exactly the same way. In 1906 the prices received for exactly the same quality of potato were :

						£	s.	d.	
July 17th	...	...	...	...	...	5	0	0	per ton.
„ 19th	...	...	...	...	...	4	15	0	„
„ 23rd	...	...	...	...	...	4	10	0	„
„ 26th	...	...	...	...	...	4	0	0	„

An average drop of over 2s. a day.

Quite a small difference in position would have sufficed to determine whether the crop had been ready to market on the 23rd or on the 26th of July, but this difference would have been worth 10s. per ton or about £3 per acre. In districts where it is possible to produce crops in time for the early high prices the advantage of a south slope is well recognised, and in Jersey the rent of a south slope may be as high as £15 per acre while the north slope is let for much less, in fact much land facing north is uncultivated and produces only gorse and timber. This, however, is an exceptional instance; in the southern English counties the north side has its compensation which on a mixed farm lessen the difference in value. It is cooler and moister: growth starts later and is slower, but continues for a longer time than on the south side. The crop ripens later and so fetches a smaller price per ton, but the yield is greater and the total profit may be as high as if the crop had grown on the south side. On light grass land a south slope may be a positive disadvantage, the ground dries up in a dry summer, and towards the end of August or the beginning of September the grass may all be scorched. Even fruit farmers do not agree that a south slope is an unmixed blessing; it is often considered that fruit grown on a south slope suffers greater injury from late frosts than fruit growing on a north slope.

Proceedings of the Society.

January 1st to March 31st, 1907.

The 742nd Meeting of the Society was held in the Geographical Hall on Saturday, January 5th, 1907, in the form of a Party for the Children of the Members.

The Victorians received their guests from 5 p.m. to 5-15 p.m., and the reception was followed by Musical and other games.

At 6 p.m. Mr. Harold Feber showed some very interesting Cinematograph Pictures of various parts of the British Empire. Afterwards he showed a series of Amusing Scenes, which were enjoyed very much by all present.

From 7-15 p.m. Games were again indulged in; light refreshments being served in the Members' Room.

At 8 p.m. Mr. J. Howard Reed, F.R.G.S., took the chair, supported on the platform by his fellow-Victorians. Mr. C. A. Clarke, Hon. Sec., read the Report of the Hon. Examiner. Mr. J. D. Wilde, M.A. (see Annual Report for 1906), and Mrs. Eli Sowerbutts presented the prizes. The Society is indebted to Mr. J. P. Hughes and to Dr. W. J. Hoyten for kindly providing most of the prizes and awards of merit. Mrs. Sowerbutts, with the help of the Victorians, cut and distributed the Christmas Cake, which was again kindly given by Professor R. W. Swallow, R.Sc., of Tai Yuan fu, China.

A hearty vote of thanks was passed to Mr. Harold Feber, Mrs. Eli Sowerbutts, Mrs. Harry Sowerbutts, Mrs. Newlove, Mrs. Ward, the Misses Newlove, and other helpers, for their kind assistance.

After more games and dancing, the children sang "Auld Lang Syne" under the leadership of Councillor Snaddon, and thus ended a very successful evening.

The 743rd Meeting of the Society was held in the Geographical Hall, on Tuesday, January 8th, 1907, at 7-30 p.m. In the chair, Mr. Egbert Steinthal.

The Minutes of the Meetings held on December 11th and 18th and January 5th were approved.

The Election of the following Members was announced by Mr. J. Howard Reed, F.R.G.S., Honorary Secretary. Ordinary: Miss M. A. Lea, Miss Ruth Taylor, Messrs. H. L. Price, F.S.A.A., Julius Stott and Peter Colliver, Professors T. F. Tout, M.A. and F. E. Weiss, D.Sc., Messrs. James Williams, Alfred Darbyshire and C. B. Byles. Associate: Mr. John E. Southern.

Mr. Reed then appealed to the Members present for further nominations, which were necessary in view of the Financial condition of the Society.

The Chairman introduced Mr. John Dendy, who gave an account of "A Holiday in the Far West," with original Lantern Slides, illustrating the Scenery of the Rockies and British Columbia. (See page 1).

A hearty vote of thanks to Mr. Dendy for his very interesting address was moved by Mr. Wm. Harper, seconded by Mr. R. G. Burton, and carried unanimously with acclamation.

The 744th Meeting of the Society was held on Tuesday, January 15th, 1907, at 7-30 p.m. In the chair, Mr. E. W. Mellor, J.P., F.R.G.S., and afterwards Mr. C. A. Clarke.

The Minutes of the Meeting held on January 8th were approved.

It was announced that Mr. A. Balmforth had become a Life Member.

The Chairman introduced Mr. Angus A. G. Tulloch, who explained the formation, etc., of Glaciers, and described some "Views taken on Glaciers and round Mount Vesuvius."

A cordial vote of thanks to Mr. Tulloch for his clear explanation and for the fine views shown was moved by Mr. George Ginger, seconded by Mr. David A. Little, and passed unanimously.

The 745th Meeting of the Society was held on Tuesday, January 22nd, 1907, at 7-30 p.m. In the chair, Mr. David A. Little.

The Election of Mr. A. V. Vallance as an Ordinary Member was announced.

The Chairman introduced the Rev. A. W. Fox, M.A., who gave an account of his experiences in the County of Kerry under the title of "A Fortnight in Dingle."

The Lecture was illustrated with Lantern Slides, mostly taken by Mr. George Higenbottam, who accompanied the Lecturer.

A hearty vote of thanks to Mr. Fox for his very interesting, instructive, and amusing address, was moved by Mr. J. Howard Reed, F.R.G.S., seconded by Mr. A. Balmforth, and carried unanimously.

The 746th Meeting of the Society was held on Tuesday, January 29th, 1907, at 7-30 p.m. In the chair, Mr. Henry Forsyth.

The minutes of the Meeting held on January 22nd were approved.

The deaths of Mr. Joseph Broome, J.P., one of the Original Members of the Society, and of Mr. H. H. Summerskill, were announced, and it was resolved that the Assistant Secretary convey to their relatives, the regret and sympathy of those present with them in their bereavement.

Mr. J. Howard Reed, F.R.G.S., gave an account of his experiences as delegate "In York with the British Association." His address was illustrated by some fine lantern slides, lent by Mr. T. P. Cooper, of York, and by Mr. Harold Feber.

On the proposition of the Chairman, a vote of thanks to Mr. Reed was passed unanimously, and suitably acknowledged by him.

The 747th Meeting of the Society was held on Tuesday, February 5th, 1907, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting held on January 29th, 1907, were approved.

The death of Mr. W. Angelo Waddington, a member of the Society, and a former member of the Council, was announced. It was resolved that the Assistant Secretary convey to his relatives an expression of the sympathy of the members with them in their loss.

Mr. George Ginger gave an account of a visit to "Sunny Sicily." The address was illustrated with lantern slides.

The Chairman proposed the thanks of the meeting to Mr. Ginger for his very interesting address, and the resolution was passed unanimously.

The 748th Meeting of the Society was held on Tuesday, February 12th, 1907, at 7-30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting held on February 5th, 1907, were taken as read.

The Election of the following New Members was announced. Ordinary: Messrs. D. R. Paterson, junr., and J. D. Calder; Associate: Miss E. Smith.

The death of Mr. H. M. Langley, Consul for Bolivia and Salvador, was mentioned. The Chairman reminded those present that Mr. Langley was one of the Original Members of the Society, and also helped to inaugurate the Society by joining the Provisional Committee formed in 1884 for this purpose. A resolution of sympathy with his relatives in their bereavement was passed.

The Rev. H. J. Rossington, M.A., described "A Tour in the Austrian Tyrol." The address was illustrated with a splendid set of Lantern Slides.

The Chairman proposed that the thanks of the Meeting be given to the Lecturer for the very interesting account of his journey so well illustrated, and it was passed unanimously.

The 749th Meeting of the Society was held on Tuesday, February 19th, 1907, at 1-30 p.m. In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on February 12th were approved.

The election of Messrs. J. W. O'Leary and A. W. Moore as Ordinary Members was announced.

Mr. E. J. Russell, D.Sc., of the South Eastern Agricultural College, Wye, Kent, gave an address on "The Relation between the Geographical Position and the Agricultural Value of Land." (See page 28.) The address was illustrated with some very fine Lantern Slides.

The thanks of the Meeting were passed to Dr. Russell for his very interesting and instructive address.

The 750th Ordinary Meeting, held on Tuesday, February 26th, 1907, at 7-30 p.m. In the chair, Mr. C. A. Clarke.

The Minutes of the Meeting, held on February 19th, were taken as read.

On the motion of the Chairman a resolution was passed that the sympathy of the members present with the Mayor of Salford in his bereavement (the loss of his son in the sinking of the s.s. "Berlin") be conveyed to him.

Mr. Charles B. Howdill, A.R.I.B.A., described some of his experiences in "Corsica," the Isle of Unrest.

The Address was illustrated with Lantern Slides taken by the Lecturer.

The thanks of the Meeting were passed to Mr. Howdill for his very interesting address.

A Meeting was held in the Manchester Town Hall on Tuesday, March 5th, 1907, at 8 p.m., under the presidency of the Lord Mayor, and under the auspices of the Manchester Chamber of Commerce, Manchester Geographical Society, and the Directors of the Manchester Ship Canal.

The Hon. C. H. Rason, Agent-General for Western Australia, delivered a Lecture on "Western Australia, its Possibilities and Prospects."

At the close of Mr. Rason's Lecture, Mr. E. T. Scammell, F.R.G.S., described a splendid set of Slides of Western Australia.

Mr. J. Howard Reed, F.R.G.S., moved, Mr. Alderman McDougall seconded, and it was unanimously resolved that a hearty vote of thanks be passed to Mr. Rason for his interesting address, and to Mr. Scammell for the slides.

On the motion of the Hon. C. H. Rason, the thanks of the meeting was given to the Lord Mayor and to the Town Hall Committee.

The 751st Meeting of the Society was held on Wednesday, March 6th, 1907, at 7-30 p.m. In the chair, Mr. J. McFarlane, M.A.

The Minutes of the Meeting held on February 26th, were taken as read.

Mr. Hilaire Belloc, M.P., addressed the Members on "The Influence of Physical Geography on the Destiny of Nations." The address was illustrated with Lantern Slides.

A cordial vote of thanks to Mr. Belloc for his very interesting address was passed unanimously on the proposition of the Chairman.

The 752nd Meeting of the Society was held on Tuesday, March 12th, 1907, at 7-30 p.m. In the chair, Mr. T. W. Sowerbutts, A.S.A.A.

The Minutes of the Meeting held on March 6th, 1907, were approved.

Mr. H. C. Martin, F.R.G.S., gave an account of a recent visit to "The Fjords of Norway." The address was illustrated with original Lantern Slides.

On the proposition of the Chairman a cordial vote of thanks was given to Mr. Martin for his very interesting address.

The 753rd Meeting of the Society was held on Tuesday, March 19th, 1907, at 7-30 p.m. In the chair, the Rt. Rev. the Bishop of Salford.

The Minutes of the Meeting held on March 12th were approved.

The death of Mr. W. F. Brownrigg was mentioned, and a resolution of sympathy with his relatives was unanimously passed.

The election of the following New Members was announced: Ordinary: Messrs. B. Hobson, M.Sc., W. J. Deeley, B.A., A. W. Longden, and G. F. Dearden. Associate: Miss Newton.

Mr. H. R. Sykes, M.A., F.R.G.S., gave an account of his journey across "The Lut, the Great Desert of Persia." first discussing the probable formation, etc., of Deserts. The address was illustrated with a splendid set of Slides, taken by Mr. Sykes during his travels.

Mr. Bernard Hobson, M.Sc., in moving a vote of thanks to the Lecturer

for his interesting address, discussed the questions raised by Mr. Sykes, with whom he did not agree as to the causes of deserts.

Mr. J. McFarlane, M.A., seconded the vote of thanks and expressed the opinion that the subject required further discussion and information as the exact meteorological condition of the place as a basis for such discussion.

Mr. Sykes replied to Mr. Hobson's remarks as far as time allowed, and the meeting closed with a vote of thanks to the Chairman, moved by Mr. J. Howard Reed and seconded by Mr. F. Zimmern.

The 754th Meeting of the Society was held on Tuesday, March 26th, 1907, at 7-30 p.m. In the chair, Mr. Charles A. Clarke.

The Minutes of the Meeting held on March 19th, were taken as read.

The Rt. Hon. Lord Hindlip (in the absence through illness of Mr. W. P. James Fawcus) gave a very interesting account of the progress of British East Africa, and of his experiences while travelling in that region. The address was illustrated with a set of very fine lantern slides.

A hearty vote of thanks to the Lecturer for his very interesting and instructive address was moved by Mr. F. Zimmern, seconded by Mr. J. Howard Reed, F.R.G.S., and carried unanimously.

Review.

"The Tourist's India." By Eustace Reynolds-Ball, F.R.G.S., F.R.C.I. With Map and 28 Illustrations. London: Swan Sonnenschein & Co., Ltd., 1907.

On the fly leaf of his book the author quotes the Persian proverb: "A traveller without observation is a bird without wings." To have quoted such a saying and not to have carried it out to the letter would have been audacious of any author, but the author of "The Tourist's India" observed and wrote as he saw, and he saw to the uttermost. No stone therefore can be cast at him for quoting a precept and omitting the example.

'Tis true the usual course to "do India" is adopted, and towns selected which all authors of travel books of India tell their fellow tourists to select, yet each visit forms a whole. Historical events and features are noted in an impressionable manner. Nature is described not in lengthy word painting but with graphic brevity and skill. Tribute is paid to the deserving and blame meted to the short-sighted statesman. Traditions are ruthlessly destroyed. Facts, bare facts, are what the author has aimed at recording, and though much that has been held as fascinatingly true is exposed as untrue by logic and argument, the romantic side of life in India has nevertheless not suffered.

Such prosaic matters as hotel tariffs, prices of curios, dates, religious sects, etc., are mentioned, but they pass in such quick succession that one is never weary of reading. To the intending Indian tourist the work will be valuable as a handbook. To the book collector it will be with its handsome binding no insignificant ornament to his shelves and not less valuable as a book of interesting reference.

E. E. L.

Reviews.

"Our Own Islands": an elementary study in Geography. By J. H. Mackinder, M.A. London: George Philip & Son.

The author of "Britain and the British Seas" has added to his reputation as a teacher of Geography in the work just published. Though written for school children, "Our Own Islands" will be read alike for pleasure and profit by those of more advanced years. It is one of the most interesting works that could be put into the hands of a child, and there is very little in it that he would fail to understand for himself. The maps, which form an important feature of the book, are clear, unburdened with details and very realistic. The illustrations are good, and on the whole pertinent, but surely Mr. Mackinder does not imagine that all Highlanders wear kilts, carry dirks, and play bagpipes. J. McF.

"A Junior Course of Comparative Geography." By P. H. L'Estrange, B.A. London: George Philip & Son, 1907.

"Philip's Progressive Atlas of Comparative Geography." Edited by P. H. L'Estrange, B.A. London: George Philip & Son.

This book with the accompanying atlas indicates that much more attention is now being given to Geography as part of the school curriculum. At the same time it may be questioned how far the method here adopted of presenting the subject to the juvenile mind is likely to prove successful. The information given does not always seem suitable for children of the age of those for whom the course is intended. Sometimes, too, the maps and diagrams are overburdened with detail and do not convey any precise meaning. The book will, however, we think be useful to the teacher, as it contains many valuable suggestions for his work.

The atlas might be considerably improved both in execution and in the arrangement of the maps. A map of Europe, for example, which does not show at a glance the relative elevations of its different mountain systems will never enable the pupils to visualise that continent; and a set of maps for Australia arranged together, showing the connection between physical features, climate and vegetation, would, we fancy, be more suggestive to the young student than the arrangement here adopted. On the other hand, there are many excellent features, and the climatic maps are specially interesting. J. McF.

"Gambia." Reproduced from the work of the Anglo-French Boundary Commission, 1904-5. Scale $\frac{1}{250,000}$. Two sheets. Topographical section. General staff.

"Uganda." Sheets 86-A, 86-B, 86-E, 86-F, 86-I, 86-M, 86-N. Scale $\frac{1}{250,000}$. Topographical section. General staff.

"Caucasia." 32 miles to an inch. Topographical section. General staff.

"Turkey." Adrianople sheet $\frac{1}{250,000}$. Topographical section. General staff.

We are indebted to Mr. Edward Stanford for the above maps, which are both interesting and valuable.

Those of Uganda will be of considerable service to members of the Society who are interested in that country. Though provisional in character and somewhat rough in execution they enable us to realise more successfully the nature of the land.

The maps of the Gambia are reproduced from the work of the Anglo-French Boundary Commission. They show very clearly the surface features of the land and indicate the nature of its economic products.

The map of Caucasia is in places somewhat indistinct in its delineations of the orography of that region. At the same time it shows clearly the geographical factors in the distribution of towns, communications, etc., and it might with advantage be used in schools, besides being of more general use.

The Adrianople sheet indicates elevation by a combination of colouring and rough contouring, and gives a satisfactory representation of the country.

J. McF.

The Journal

OF THE

Manchester Geographical Society.



A GLIMPSE AT WESTERN CHINA :

THE PROVINCE OF SHANSI.

By R. W. SWALLOW, B.Sc., of Shansi University, Tai Yuan Fu.

(Portion of an Address delivered to the Society in the Geographical Hall, on Friday, February 16th, 1906.)

THE Province of Shansi, or, as its name signifies, West of the Mountains, is one of the least known parts of China. It is shut out from the busy and populous provinces of Chili and Honan by huge mountain ranges, and on the South and West is bounded by the Yellow River. The journey over the passes is a very arduous one, and was never attempted except for very special reasons. I personally have gone into the province by five different routes, and each one has seemed to be more difficult than the others.

The result of these natural boundaries has been that the province has been shut off from the rest of the world, and the people are considered to be the most conservative of a very conservative empire. Politically Shansi has played a very small part in the destinies of the country, though the Chinese race had its origin on its Southern border. In fact several cities in that part of the province have been at one time and another the capital of the country and Tai Yuan Fu held that proud position for a few months in ancient times.

However great was the glory of the province in the ancient times it has little of its former grandeur left, and in the words Vol. XXIII. No. 2, 1907.

of the Chinese has suffered by the decrees of Heaven. The Tai Ping rebellion depopulated much of the Southern portion, and in the second and third years of Kuang Hsü, the present emperor, it was subjected to a terrible famine. For three years in succession the harvest failed, and there was nothing left for the people to eat. The trees were stripped of their leaves, the grasses of the field were torn up and eaten, and when they gave out cannibalism with all its horrors stepped in. Children were sold for a few cash, and in many instances given away, and the courts of justice were so deserted that the officials did not see anyone for weeks at a time. Corn came in from all sides, but so great were the difficulties of transport that its price was prohibitive to all except a few rich people. With the famine came plague, and from eight to ten millions of people perished. Yet for all this there was no rebellion and little disturbance, and it was truly said that the Shansi people knew how to die. Since those terrible days the condition of the people has improved considerably, but ruined towns and villages still remind us of that time, and cause us to understand the happiness of the people whenever the rain falls plentifully.

It was not until the journey of Baron Richthofen that the world at large knew that Shansi was the centre of the richest coal field in the world, and that there were other gigantic mineral deposits waiting to be developed. One or two people attempted to get concessions, but they met with little success, and the difficulties of transport were so great that no definite attempt was made to open up the country. Before long the world forgot about Shansi, and though the Governor Yü Hsien killed fifty missionaries in 1900 in Tai Yuan Fu, the provincial capital, the news created little sensation, as the whole attention of Europe and America was fixed on the relief of the Legations.

In 1900 over one million of the people in the Province died of cholera, but even this was allowed to pass unnoticed, and the old Westerners, as they are called, moved along in their calm, slow manner, and accepted this new trouble with stoical indifference. They refused to eat melons, as they were declared

to be dangerous, but they did nothing else to prevent the spread of the disease.

The physical features of the province are decidedly interesting, and in many respects unique. The greater part of the country is occupied by gaunt treeless mountains, and between the ranges are loess or yellow dust plains and loess hills. The mountains rise abruptly from the plain and are almost useless for cultivation, though here and there a few poverty-stricken people scratch at the surface and plant seeds hoping to get a small crop if the season happens to be a favourable one. The loess land is, however, very rich if it is well watered, but the scarcity of rain is a great drawback, and bad crops are the rule rather than the exception. The loess is exceedingly dry, and soaks up the moisture like a sponge. On the hills the loess takes the most fantastic forms and gives rise to a very peculiar kind of scenery. In one place the road is between cliffs fifty and sixty feet high, and a little further on it runs by the side of an enormous ravine. The loess formation is easily destroyed by rain, and the vertical cleavages are so frequent that the enormous cliffs of one year may in the next few years be represented by one or two solitary pinnacles which in their turn fall away when the next rain comes. These loess hills often take the shape of terraces, and rise up one after the other until they are almost as high as the surrounding mountains. In fact the yellow dry dust dominates everything. When there is a wind clouds of it fill the air and enter every nook and cranny. The rivers are laden with it, and as they rush along in their wild, uncertain way, they deposit their burden and speedily fill up their channels, so that in a few years they change their courses and become useless for navigation. In the summer the sun shines on the dusty plain, and the reflected heat makes the air close and stifling, while in the winter one sees nothing but an endless stretch of bare yellow country.

Tai Yuan Fu, the provincial capital, stands in the centre of a large plain, which runs North and South between two ranges of mountains. This plain is the most prosperous part of the

province and is studded with numerous villages and a fair number of Hsien or small walled cities. The houses in this part are said to be superior to those of any other part of China, and some of them look very imposing with their high brick walls, square towers, and ornamented gateways. It is true a closer view is often very disappointing, but they are, on the whole, much more substantial than the majority of Chinese houses. The reason of this is, that this district is the home of the chief bankers of the Empire, and though the people at large are not wealthy, still there are large numbers of Tsai Chus or rich men, for in addition to the bankers, there are a number of merchants who have business in Mongolia, Manchuria and Asiatic Russia.

Tai Ku, the chief business centre, is a very prosperous place, and at one time contained a fair number of millionaires. The streets are crowded, and the great stores are packed full of goods, while many of the doorways and arches are beautifully ornamented. In the suburbs there are many imposing buildings, and perhaps there is no place in inland China where so much wealth is contained in so small an area. It is true that the troubles in Manchuria have caused great losses to these merchants, but still sufficient trade remains to make the place of great importance.

To the South and West of Tai Ku are the cities of Chi Hsien, Ping Yao and Gieh Hsiu, which also have many bankers and merchants, but they are not so large and important as Tai Ku.

The wealth of this district has, however, brought few blessings with it, and seems to have corrupted and demoralised many of the people. The Lao Tsais, or old rich men, have an unenviable record for meanness and conservatism, and they are, almost without exception, confirmed opium smokers. They live close confined lives, and are destitute of patriotism and its kindred virtues. What money is not used for business purposes is melted into large lumps (to prevent theft) and buried in the ground. The management of their shops is left in the hands of their agents, and they refuse to let their sons leave their homes.

In order to prevent the young men from going away and spending money, they are encouraged to smoke opium, and in many of the houses everyone, without respect to age or sex, is a victim to the habit. Such a policy defeats its own ends, and most of the fortunes made are dissipated in the second or third generation.

Going to the South of the province the chief object of interest is a salt lake which is about thirty miles long and one mile wide. Enormous quantities of salt are taken out of it every year, and as it is a Government monopoly the post of salt commissioner is a very lucrative one. To the South-east, on the borders of Honan, is Tsê Chou Fu, a fine and prosperous city, and the centre of a valuable anthracite coal field. North of it is Lu An Fu, a large but dilapidated city where there are some famous iron works. From the West of the Tai Yuan Fu plain to the Yellow River the country is exceedingly mountainous, and the few inhabitants who live there earn a very precarious livelihood. Yet in spite of this emigrants come from the densely populated provinces of Hupeh and Zechuan, and cultivate the mountain slopes which the Shansi people in their extremity find too unprofitable to cultivate. To the North of Tai Yuan Fu there is a series of plains divided off by mountains, but after a few hundred miles or so the country is very poor and the people few in number. In the North-west is Gua Hua Chêng, a large and prosperous city, which does a great trade with Mongolia, and where there are some famous horse fairs.

East of Tai Yuan Fu is Ping Ding, which is destined to become a great coal and iron district, especially now that the railway is passing close to it. A considerable export trade is already done in crude iron pots and agricultural implements, but there is not the slightest attempt to depart from the methods of manufacture which have been in existence for hundreds of years.

In spite of the great mineral wealth, Shansi remains an agricultural country, and the chief products are wheat, sorghum and millet. After these come buckwheat, beans, hemp, Indian

corn, potatoes and oats. The oatmeal is excellent, but is not liked by the people, who much prefer macaroni made from flour or millet gruel flavoured with vegetables. Rice is only grown in a few irrigated districts, but most of the best land is given over to opium. This year, however, owing to the heavy taxes put on it very much less opium is being grown, and it is hoped to lessen the area under cultivation year by year. The grapes are excellent and very cheap, but the apples, pears, apricots and peaches are of very poor quality, and are very inferior to the English varieties.

The chief means of transport is by mules and camels, but in the plains the heavy springless carts stumble along and raise clouds of dust on every side. Some of the mules are very fine, and they carry heavy loads over the most terrible mountain passes, but the horses, though very hardy, are of small size and uncertain temper. There are a few oxen which are used as beasts of burden, but the sheep are of fair quality and scrape together an existence from the grass on the mountain sides.

Wolves roam over the mountains, and sometimes come down to the plains. They frequently attack people and are a cause of terror in many villages. There are a few leopards and one or two mythical tigers, but the animals are, on the whole, few in number, and hunted so much that they do not increase.

The people are very different from the "slim," suave gentleman from Shanghai, or the robust, loud-voiced natives of Chili and Shantung. They are rustic and old-fashioned, slow to move and suspicious of strangers. Their love of money is proverbial in a country where thrift is carried to a science, and many are the tales told about them trying to save a few cash.

To understand their dialect would strain the patience of angels, and they often have great difficulty in understanding one another. A Pekinese ditty runs thus:

"Tien bu pa,
 "Di bu pa,
 "Ging pa Lao Hsi Er
 "Showa Ging hwa."

"I don't fear heaven,
"I don't fear earth,
"I only fear an old Westerner
"Speaking Pekinese."

A Shansi man is fair game for a crowd of sharp-witted Chili people, but he is much more trustworthy than they are, and though he may be very slow in making promises, there is some probability that he will carry them out. It is this comparative reliability which has made him famous as a banker and merchant, and on this account he may be forgiven the absence of many outward recommendations. Though apt to quarrel, he is seldom violent, and there is little serious crime. The women have very small feet even for China, and are utterly incapable and ignorant. Not one in a hundred can read or write, and their helplessness is one of the weaknesses of the country.

The dress of the people consists in the winter of coarse cotton cloth wadded with cotton wool, while in summer the same kind of cloth is used without the wadding. The trousers are extremely baggy and are bound at the ankle by a piece of ribbon. The respectable, well-to-do people wear long gowns, but the poorer classes content themselves with short coats. Silk is not much used except by the officials, and the clothes of the majority of the people are very badly cut and behind the times. Some of the sleeves of the scholars from the country places are exceedingly long, and so broad that they form a convenient receptacle for all manner of goods.

I remember once talking with a man for over half an hour without noticing anything peculiar about him when, to my surprise, he brought out a large vase from one sleeve. While I was looking at it another vase came out of the opposite sleeve, and as may be expected I kept a sharp eye on my visitor in case he should take a fancy to any of my treasures.

The towns with the exceptions already mentioned are dirty, dilapidated places, containing the Yamen or official residence, several temples, a few shops, and a number of half tumbled-down houses. The majority of the people live in villages, and

these may be divided into three classes, namely, those of the plain, the mountains and the loess hills. The village of the plain is the scene in my mind which most adequately represents this part of China, and it may be described as follows. From a dusty road, you enter a long, narrow street, and the first sight which greets you is the village temple, with one or two men lounging in the doorway. Then come one or two tumble-down buildings and a small open space, where a woman is grinding corn. A donkey turns round the grindstone, and no matter when or where you go you seem to see the selfsame donkey turning round the selfsame grindstone. After this are a few small huts with two or three men squatting down and a few children playing beside them. When you return next year you seem to see the same men sitting on the same doorstep and the same children playing the same game. A woman hobbles along and shouts out something to another woman standing in the opposite doorway, and on the side is an open-air restaurant with one or two travellers sipping tea. A cart stands by the side of the road with a mule tethered to it, and by the side is a man with a bowl of millet in one hand and a pair of chopsticks in the other. One or two dilapidated inns, a small shop, several manure heaps, a surly mongrel dog, a fairly large house with an ornamented doorway, a few more huts and you come to the end of the village.

This is China as we know it without romance and without any of the mystery of the East. Everything is poor, dirty, dilapidated, and the few attempts at ornamentation are mere tinsel and dross. It must not be assumed, however, that the people are always as poor as they appear to be, for even those dirty huts may store a fair supply of corn, and the man we saw squatting in the doorway may own a hundred acres of land. The standard of living is so low that the well-to-do farmer lives very much the same as the labourer he employs, and it is very difficult to gauge the wealth of the country.

The mountain village is generally hidden away at the side of some mountain or by a valley. The houses are built fairly high

to protect them from the summer rains and the long street is absent. The people are hardier looking, but not so prosperous, and are much more uncertain as to their crops. If no rain comes they are short of water, and when it does come they have to fight against the floods. If it is winter time many of them will wear dirty-looking sheep skins, and they have that dull, stupid look, as though they were wearied by their everlasting fight against destiny.

The loess village is unique and quite unlike the others. The land rises in tiers, and on each are a few scattered houses. Some of these are little more than caves dug into the earth cliff, and a few yards further on may be a deep precipice. The sombre greyish colour of the loess overshadows everything else, and the flat lands rising one above the other seem to yearn for a drop of water. All that the people need is a good downpour at the right season, and then the crops are heavy and the garnerers full. Even the good years are not without their anxious moments, for the rain never comes until the very last moment, and gives its help in the most grudging manner.

The climate of Shansi is very healthy, consisting of a long, cold winter, and a long, hot summer, with a few intervening days of spring and autumn. The skies are blue, and the atmosphere wonderfully dry and clear. The sun's rays are very powerful owing to the small amount of moisture in the air, and the average rainfall is from 12 to 15 inches.

Tai Yuan Fu, the capital of the Province, has walls of over ten miles in circumference, but has only about forty thousand inhabitants. It is the centre of officialdom, for the Governor of Shansi lives there, together with the members of his Council and hundreds of subordinates who occupy places in Boards and Bureaus, to say nothing of great numbers of expectant officials who are waiting for vacancies. Without they have influence or money they may have to wait many years before they get a post, and even then they may be dismissed for a very slight offence. In addition, they have to give frequent presents to their superiors and are very often in desperate circumstances. The

career of an official is little more than a game of chance, and amidst the endless ceremony and routine of their lives come many exciting moments.

The Yamens or official residences are large, imposing buildings, with huge gateways and many courtyards, but they are strangely lacking in comfort, and the decorations, though rather imposing to look at, are in reality very cheap and gaudy.

The life of the ordinary people is monotonous in the extreme, and relief is only afforded by theatres, marriages, deaths and feasts. The former is generally an open-air performance, and to our minds is exceedingly crude and uninteresting. Very little attempt is made in the line of scenery, and much of the time is occupied by a series of songs delivered in a high-pitched falsetto, accompanied by clashing cymbles and a squeaking instrument something like a zither. Marriages and deaths are solemnised in a very extravagant scale, and families are frequently impoverished for years in consequence. It is at a feast, however, that the Chinaman is in his true element. Sitting at a round table full of various kinds of dishes, and dipping his chopsticks first into one and then into another is to him a near approach to paradise, and when he has eaten to the full then his happiness has reached its height. Quarrels and disputes of every kind are easily settled by a skilfully arranged feast, and were it not for this, life would be much harder to bear, and disputes would drag on to eternity.

In matters educational the Shansi people are very much behind those of other parts of China. It is said that if a Shansi man has three sons the cleverest becomes the head-servant in a Yamen, the next goes in for business and the fool becomes the scholar. In the old Hsin Ysai or B.A. examinations the candidates would in most places only number a few hundreds, while in Shantung and South China, under similar circumstances, the aspirants would come up in their thousands. In some districts in Shansi there would often be a difficulty in getting a sufficient number of men to enter, and so the standard for passing would be very low.

Of late, however, there has been a great improvement, and there are signs that the spirit of progress has reached even to this part of the world. In two or three months the railway will have reached Tai Yuan Fu, and already a steam roller is helping to make the roads better. Twenty-five students from the Shansi University have gone to England to study mining, and it is hoped when they return they will be able to help their country, and enable this ancient province to take her proper place in the new movement which has been properly called the awakening of China.



PORTRAIT OF OUR LATE SECRETARY,
MR. ELI SOWERBUTTS, F.R.G.S.

The members of the Society will be pleased to learn that, through the efforts of our member, Mr. Robert Stewart, an enlarged copy of an excellent portrait of the late Mr. Eli Sowerbutts, has been hung in the Members' Room of the Society, and also that a similar portrait is to be found in the picture gallery at Heaton Park.

The Royal Geographical Society and the Royal Scottish Geographical Society, also have similar enlarged copies of the same portrait on their walls.

THE LUT, THE GREAT DESERT OF PERSIA.

By HERBERT R. SYKES, M.A., F.R.G.S.

[Addressed to the Society in the Geographical Hall on Tuesday, March 19th, 1907.]

THERE is something awe-inspiring in the thought of those vast tracts of the Earth's surface which we call deserts; regions, for the most part rock and sand, blighted by the hand of Nature, and doomed to eternal solitude, where Death reigns everywhere supreme lord of fearfulness and silence. The very word conjures up, does it not, such sterile territories as the Desert of Gobi in Asia, the vast Sahara, occupying an area two-thirds that of Europe, the untraversed plains of Central Australia, and the Lut of Persia: not to mention a host of others, equally terrible in the horror of their desolation, even if less in area.

When we come to consider the question of deserts and the causes which govern their distribution over the Earth's surface, we find that their existence is due to certain principles, partly geographical, but largely meteorological.

In the first place they are chiefly confined to a belt of country lying between the 20th and 45th parallels of latitude on either side of the Equator, that is to say, between the belt of tropical rain and the region of cold: and it is evident from this distribution that deserts owe their existence to general meteorological conditions.

In the second place, no area of the earth's surface is absolutely free from precipitation of the aqueous vapour held suspended in the atmosphere, but as any inequality in the Earth's surface causes the vapour-laden atmosphere to rise, thus becoming chilled, and so to precipitate itself in the form of rain, it follows that upland regions will usually be found to be favoured with much rain while lowland regions are comparatively dry. Hence, other things being equal, desert conditions are more

likely to be developed in plains than in districts marked by inequalities of surface. But even hilly regions will be subjected to desert conditions if the winds that blow over that district be charged with but little aqueous vapour. This is an important modification of our first axiom to bear in mind, because there are mountain ranges in the Lut, as I shall presently show you, which might lead one to suppose that as the Lut is not altogether a plain so it is not altogether a desert. The conditions favourable for the existence of deserts on a large scale occur when extensive mountain ranges separate a large tract of continent from the prevailing vapour-laden winds. From the foregoing remarks it becomes clear that given a low-lying tract of country in the heart of a continent surrounded by mountain ranges, at all events on these quarters from which the prevailing vapour-laden winds blow, the result will be that that district displays desert conditions.

So much, then, for general principles, I will now ask you to turn your attention to a large belt of country which includes the Sahara, portions of Egypt, the Sinaitic peninsular, and most of Arabia and Persia with Baluchistan and we might add Afghanistan, and extends practically to the eastern limits of the Desert of Gobi. The whole of this area may be accepted as one huge territory given over almost entirely to desert conditions, and as such required, so it was thought half a century ago, a single theory to cover and explain its existence, and such a theory was then evoked.

It was generally supposed that a vast current of air emanating from the north polar regions, and deviated by the rotation of the Earth on its axis traversed obliquely those portions of Asia and Africa just mentioned. Now, since the aridity of a country increases by reason of its distance from those seas which may reasonably be expected to yield up their vapours, it was natural to suppose that this current left each country it passed over as dry as it found it. The proximity of the Atlantic could be of no service to the western Sahara, for the wind which reached it had already traversed the Steppes of Asia, the

plateaux of Iran, Northern Arabia, and all the deserts situated west of the Nile, so that Peschel portrays the Sahara as actually dying of thirst within sight of the ocean!

A glance at the map will show you that the position of these regions exactly fits the application of the theory. We can see in our mind's eye the cold dry wind leaving its home in the north, driven southward, and then as it comes under the influence of the Earth's rotation, gradually assuming a more westerly course, until as it reaches the latitudes of the Sahara its direction is about due west. We picture it losing what small amount of vapour it ever possessed in northern Asia, and then as it sweeps over the desiccated sands and rocks of Persia and Arabia accumulating a storage of heat until with a breath like the blast of a furnace, it rolls on, raising in the Sahara these fiery sand-storms that are death to the wayfarer. This is a charmingly simple theory but one which unfortunately is found on close scrutiny to be utterly without foundation.

M. Woeikoff, a Russian scientist, in exploding this brilliant piece of imagination as regards the Sahara, has incidentally thrown some light on the great desert of Persia. In Summer, he says, the deserts of Asia are themselves the centres of systems of high temperature, and draw currents of air from the neighbouring regions. These currents are found to converge towards three principle centres of barometric depression: one lying to the North-west of India (Baluchistan); another including Eastern Turkestan; the third being the Kara-Kum south of the Aral Caspian Steppe. At the same time the warm plains of Mesopotamia are drawing air from the Mediterranean to such an extent that the trees around Jerusalem are actually bent towards the north-east.

In winter the conditions are almost exactly reversed; the cold air does it is true take a southerly direction, but it does not reach the Sahara. It answers the call of these regions where at this time of the year the barometric pressure is low, namely the Black Sea, the Mediterranean, and the Persian Gulf.

From what has already been said, we may, I think, deduce the following reasons to explain the aridity of the Lut:—

(a) The airs which reach the Lut are for the most part currents from the north, which arrive in the Lut in an already desiccated condition, having precipitated any moisture they once contained in traversing the plains of Turkestan and the mountain ranges of Khorassan.

(b) The moisture-laden winds from the south have in like manner long before reaching the Lut precipitated their moisture on the heights of that great divide which so effectually cuts off the Iran Plateau from the coast. For similar reasons the east and west winds reach the Lut in an equally vapourless condition. So dry, in fact, is the air of these regions, that M. Khanikoff has registered a freedom from moisture which will hardly find its equal in any part of the globe.

(11·2% relative humidity which is '8% less than Humboldt measured in the Barabinskaya Steppe.)

If these are the conditions of to-day, may we not reasonably ask how long have they prevailed thus, have any changes been recorded within historical times, is the present tendency towards an increase or decrease of desert conditions, and what causes govern that tendency?

I think there is no doubt at all that large tracts of central Persia which now appear as salt marshes, or lie under sheets of salty efflorescence, were within recent times (geologically speaking) covered by sheets of water, at first fresh, then as evaporation began to exceed precipitation and their area to diminish, becoming salt, until to-day their former existence is only shown by salty deposits (called Dasht-i-Kavir on the map) through which there probably courses a stream of brine salt to the point of saturation.

Khanikoff, speaking of that portion of the Lut which lies east of Kerman, relates a local legend to the effect that this desert was once under a salt lake which vanished the instant the Prophet Mohammed was born into the world. I was told a similar story at a village on the edge of a salt marsh when travelling between Yezd and Meshed; but in this instance it was Our Lord who appeared on the spot and caused the ultimate

disappearance of the lake. Such legends might be multiplied indefinitely.

The same traveller describing the bed of the Khusp river, which flows from the eastern limits of the desert towards Kerman, makes the following observations:—

The river of Khousse contains but little water, and what little there is is completely absorbed for the irrigation of the surrounding fields; its dry bed, however, crosses the whole length of the desert. In the memory of man it has never been filled with water in the Lut. Even in the years when most rain has fallen its waters have never passed beyond that part of the country which is inhabited. Yet this fissure is of too great a depth in the soil of the desert for us to suppose that it has been caused by a simple meteorological occurrence as a torrent of rain. It evidently owes its origin to a long and constant action of flowing water; we are therefore led to believe that the level of the rainfall has from no very distant date fallen considerably.

Prince Kropotkin, in a paper read by him some few years ago before the research department of the R. G. S. has dealt minutely with the fact that central and northern Europe and Asia are now, and have been since the beginning of historic record, in a state of rapid desiccation; and so clearly does he state his case that perhaps I may be forgiven if in the following remarks I draw largely from his pen.

This desiccation, he says, is a geological fact which is entirely dependent on the character of the geological epoch which preceded it, and must be considered in connexion with it. The geological period in which we live may be termed the Post-Glacial period, and it is to the Glacial period itself that we must look for an explanation.

During that period nearly the whole of Eurasia to the north of the 50th parallel and a very large portion of the highlands south of this line were buried under ice. Then came a period when this accumulation of unevaporated and frozen precipitation gradually began to dissolve; the ice sheets which covered Eurasia began to shrivel and thaw. Immense volumes of water

must have been annually discharged southwards from this mass of thawing ice, and large tracts of country must have been inundated each summer with muddy rivers, and finally the area once covered with ice was converted into large lakes. Old drainage systems having been choked by glacial deposits, immense territories had no drainage, and new channels had to be dug out in order to find an outflow for the waters towards the ocean. This period then, responsible for submerging a large area of Eurasia under innumerable lakes (such as now form so conspicuous a characteristic of the map of Finland) was equally responsible for the inundations of the Lut, for the ice on the surrounding mountains must have melted, and the resultant liquid would accumulate in the natural depressions, which, then as now, received drainage from all sides. Thereafter began over the whole surface of Europe and Asia a desiccation which is going on now and has been continued unintermittently since the end of the glacial period. It is not with a temporary fact that we have to deal. It is a geological epoch of desiccation that we are now living in, and the necessary outcome of the preceding period of glaciation. It is interesting in this connexion to remember that the only great glacial epoch besides the pleistocene of which we have any record is that which took place in Permo-Carboniferous times, and in the trias which followed, desert conditions prevailed extensively.

So far as my discussion has gone I have only invoked the aid of Natural Agencies to account for the desiccation of the Lut. We must now enquire to what extent in past and present times man has shown himself in any way responsible for the enlargement of the desert. To begin with you must know that no part of Eastern Persia is capable of producing crops except by the aid of irrigation. In no portion of the provinces of Yezd, Kerman, and Khorassan so far as I am aware does the rainfall exceed 10 inches, and this is the minimum annual amount capable of producing crops naturally. In fact Eastern Persia might be described as a desert tempered by occasional oases, and the Lut as desert pure and simple. The oases are

only kept alive by springs tapped in the hills, the water being laboriously conveyed, often for many miles, in underground channels, termed Kanats. Unless these Kanats are constantly attended to they soon become choked with sand. There is little doubt that the system of wholesale devastation on which the conquests of Tamerlane and Chengis Khan were conducted, when whole populations were mercilessly put to the sword, have tended to enlarge the limits of the Lut very considerably. For once the kanats were choked, and this would occur in a few months, the oasis or village would necessarily become as barren a spot as any part of the desert; Afghan, Baluch, and Turkoman raids carried on till quite recently, must also have had the same effect. The flagrant corruption of the Persian Government of to-day, the greed of the powerful classes, and the prevalence of brigandage have all tended in the same direction, namely to the suppression of individual exertion, so that much territory even outside the limits of the desert proper, which was thriving and teeming with a wealthy population when Marco Polo passed through in 1270 is to-day a barren plain sparsely sprinkled with the tents of a few nomad families.

Such, then, is the past history of the Lut. What it is to-day I shall show you presently by means of photographs. There seems to be no hope for it in the future. The desiccation which began thousands of years ago is still at work, and must continue through the present geological epoch.

JOURNEY ACROSS THE LUT.

It was on the 10th of October, 1903, that I left Yezd for a journey of over 400 miles across the Lut to Meshed. I was accompanied on that occasion by two ladies who are, probably, the first two European ladies to have crossed the Lut by this route. Miss Tanner was paying her third visit to Persia, having during the previous sixteen years of almost constant travel, visited nearly all the quarters of the globe. Miss Ethel Sykes, my cousin, was following in the footsteps of her sister, the

authoress of "Through Persia on a Side Saddle." I had already accompanied these ladies from Bundar-Abbas to Kerman, 300 miles, and thence to Yezd, another 200; but the next 450 miles was to prove the most arduous of any of our journeys.

We travelled with a "Pishkhana," that is to say, we sent on spare tents and our spare camp equipment over night, so that, on our arrival at the end of our days march, our camp might be readily pitched for us, and we saved the weariness of those tiresome hours most travellers experience which must elapse while tardy mules are unloaded, tents pitched, fireslit, and meals prepared.

I took a few extra precautions as to provisions. We carried the usual tinned food-stuffs—butter, jam, milk, etc.—and dried vegetables besides potatoes, rice, tea, coffee and sugar, none of which we well knew would be procurable once we left Yezd. In addition one mule carried four large earthenware jars encased in two boxes which contained our drinking water, and a camel carried about 100 water melons, of less repute among Persians than the melon proper, but more thirst-quenching and not so sweet and so on the whole preferable. These just lasted as long as the hot weather continued.

Our transport consisted of twenty mules and twenty camels, some horses and one or two asses. The actual start was not an auspicious one. On the evening of the 9th, the Governor of Yezd, the Jelál-ud-Dóla, being himself on the point of making a journey sent round and commandeered all the mules in Yezd, mine among the number; and it was only after some hours that they could persuade his servants that the mules were engaged by the "Sahib." Thus the cook was unable to proceed with the Pishkhana. A newly engaged servant, too, was apprehended on a charge of theft and we were obliged to start without him. I managed, however, to get him released by promising to examine his saddle-bags and send him back if the missing articles were found therein. The saddle-bags were unlocked under my own eye and I was glad to find nothing but a servant's ordinary travelling kit.

It was soon after sunrise that, accompanied by the tinkling of many mule bells and the shouts of the drives, we wound our way through the narrow tortuous streets towards the northern gate of Yezd and after a short half-mile of gardens found ourselves in the desert of sand which surrounds the city to an alarmingly increasing extent. After a dozen miles, on approaching the slopes of a range of hills, the road became stony and presently, as the hills closed in upon us, we turned a bend in the road: round a corner of rock we got our last view of Yezd lying below us in the valley. As we moved forward again I could not help thinking we had left civilisation behind us and were now on the threshold of one of the earth's most weary wastes. So to our first halting place, Anjirak, with its dirty caravanserai and walled garden, and a tower of refuge with the door high up in the wall. The water here was salty and practically undrinkable so we had recourse to our invaluable water vessels. (I may mention here that during the first 375 miles from Yezd, we only found good drinking water at six places.) That afternoon was made unpleasant by a high wind that raised clouds of dust.

Kharúneh was reached the next day after a six hours ride. It lies at an altitude of 5,500 feet or about 1,300 feet above Yezd, and is one of the most remarkable villages in Persia. Built entirely with its four walls which form a square of about 120 yards each way it accommodates a crowded population of about 300 souls. The houses are so compact that there is no room for streets which have degenerated into mere arched passages about 8 feet wide and ten or twelve feet high. The village square or Meidán is only about twenty-five feet each way and contains a husseinieh or rostrum from which is annually recited the Persian Passion Play recalling the tragic deaths of Hussein and Hassan. One of the inhabitants piloted me through the village. The only entrance is by means of an iron studded gate in the eastern wall supported by turrets reminding me forcibly of the entrance to so many of the Welsh castles built in Plantagenet days: only Kharúneh is far more ancient than they: tradi-

tion makes it 500 years older than Yezd or about coeval with the Christian Era. Without the walls is a spacious caravanserai. Near the village I was shewn mounds said to be the remains of a still earlier Kharúneh. They might or might not repay careful excavation.

Our next day's march was a short one of four miles only to Doqáli: we halted here in order to get the advantage of a sweet spring. A party of pilgrims, mostly women on their way from the holy shrine at Meshed, halted for an hour or two while we were there, and spent a good portion of their leisure over their devotions. The next 20 miles to the caravanserai of Rizáb proved a somewhat eventful march, for my advance camp sustained a midnight attack from a band of robbers who haunt the district. Being beaten off in their first attempt they took refuge in the very caravanserai which we were to make our headquarters where our men were again attacked on their approach. Fortunately I had been warned of the dangers of this road before leaving Yezd, and the Jelál had kindly provided me with an escort of cavalry, four in number. But for their timely presence I should indeed have fared badly as none of my servants or camel drivers carried arms. As it was I lost two camels, and one horse killed, and another horse they made off with, while one of my servants—the cook, unfortunately, with all the keys of the various stores—was stripped of everything he had, including most of his clothes. Fortunately none of my followers received any personal injury.

On the following day we reached an oasis, Sákúnd, where was a pleasant village and sweet water. Here I fell a victim to fever which kept me 48 hours in bed during which time the ladies were most assiduous in their ministrations; and I owe it to them that I recovered so soon. On the 17th we reached a caravanserai and salt pool called Illahabad, and the day following, after a long and weary stage of 24 miles, Pusht-i-Bádám. We were now in the heart of the Lut and on the outskirts of one of its least attractive portions. The country we had traversed had presented a more or less mountainous appearance, but from an

eminence near this village I could discern a limitless plain extending in a northerly direction, beyond which no trace of mountains was visible. I mention this as being a somewhat remarkable feature as the horizon of a Persian landscape is invariably bounded by mountain ranges.

We made a short march to Shoráb on the following day with the object of shortening as far as possible the next march. Even then it was a sore tax on us all consisting as it did of full 30 miles. The first ten lay across a barren plain of gravel and sand at the termination of which we found ourselves at an elevation of only 2,600 feet. The heat was trying, and when the hour of our midday halt drew nigh there was no shelter from the rays of the burning sun and we ate our simple fare seated on a slab of rock which might just as well have been the top of a stove. A few miles further on we were met by a belt of sand which had to be crossed. The track was almost invisible as it wound in and out among the sand dunes and the poor transport animals floundered along painfully throughout the five miles of this weary tract; but at last it ended and we reached "terra firma" again and, after crossing a small pass, descended to a spot called Sar-i-Cheshma-i-Shuterán. A forlorn spot, too, after a weary day's march, but somewhat picturesque notwithstanding. A pool of very dirty water fouled by the feet of caravan animals standing at the foot of a sheer limestone cliff. Near by were the walls of a disused and dismantled caravanserai rapidly falling into ruin.

The following day Robát-i-Khan was reached at an altitude of 3350 feet after a pleasant 10 mile ride, and here by going $1\frac{1}{2}$ miles into the hills a very meagre trickle of water was to be found which enabled us to fill up our water jars.

The next village lay more than 50 miles ahead of us but two intervening caravanserais (with the usual salt springs) enabled us to divide the distance into three marches, and at Chahar-deh-i-Tabbas we halted for two nights to rest our animals and to enjoy the luxury of a rest beneath a grove of palms. We were now a mere matter of 2400 feet above sea-level and the

weather was pleasantly warm it being now the last week in October. We had now traversed about 200 miles of the Lut and had very nearly 200 miles more before we should reach Turbat-i-Haideri at its northern limit.

About 55 miles beyond Chahár-deh-i-Tabbas lies Neigenu : it is interesting as lying on the edge of one of those depressions which are now salt swamps but were once inland seas. The village which stands on a cliff a hundred feet or so above the level of the plain is evidently a place of great antiquity for there was a ruined fort, the successor of a still older building of which the original form could only be vaguely surmised. It was here that I heard the legend of our Lord's appearing and the subsequent drying up of the lake. The word " Nei " is Persian for a reed and doubtless the village owes its name to the presence of reeds in bygone days which may have flourished as profusely as they now do in the " Neizar " by the shores of the Seistan lagoon.

The next day we struck out across the salt plain. A very few miles brought us to a bridge spanning a clear stream of *pure brine* all that now remains of the former lake ; further on we entered the salt itself. It covers the ground for miles and strongly resembles snow or hoar frost. If you tread on it it cracks and crunches under your foot like ice, and underneath it lie a few inches of light powdery dust. In wet weather it becomes almost impassable. On this particular day the camels of the Pishkhana lost their way and arrived in camp after us, which inconvenienced us, and gave them a twelve instead of a five hours march.

We were now about 2800 feet above sea level, an altitude which we maintained for several days with but slight variations till Faizabad was reached nearly 100 miles further on, at which point we again saw cultivation on a considerable scale.

The whole of the intervening ground has once been the bottom of the inland lake I have mentioned, and at Faizabad the cultivation is carried on by means of wells, water being found abundantly a few feet below the surface. On our way thither

we passed the village of Yungsi, said to be the same word as Jonah, a legend declaring that at this spot Jonah was cast up by the whale.

Our twenty-fifth march brought us to Turbat-i-Haideri, and we camped under the walls of the Mausoleum erected to the memory of the famous saint who has given his name to the town. We had now travelled 396 miles from Yezd and had finally left the desert behind us. I do not think any of us were sorry to do so. Those who rave about the beauty of the desert as described so ably in "The Garden of Allah" should try the real thing! The eternal solitude of those inhospitable regions, the arid plains, or dry barren uplands become very irksome after a month. Another 80 miles and we beheld the golden dome and minarets of the famous shrine at Meshed: and in the British Consulate a warm welcome awaited us. After 35 days on the march the luxury of a house and all the comforts it provides must be experienced to be adequately realised.

SYNOPSIS OF JOURNEY FROM YEZD TO MESHED.

				Feet	Miles		
1.	Anjirak ...	...	...	5130	17½	...	17½ Caravanserai and garden.
2.	Kharūneh ...	...	...	5650	18	...	35½ Walled-in village and cultivation.
3.	Dogāli ...	...	...	5050	4	...	39½ Spring of sweet water.
4.	Rizab ...	...	...	4150	19½	...	59 Ruined caravanserai, very bad water.
5.	Sakūnd ...	...	...	4410	12	...	71 Walled village, sweet water.
6.	Ilahabad ...	...	...	3750	14	...	85 Caravanserai, very salt water.
7.	Pusht-i-Bādām ...	...	...	4150	24	...	109 Fortified village, fair water.
8.	Shorab ...	...	...	3600	4½	...	113½ Hamlet, palms, very salt water.
9.	Sar-i-cheshma-i-Shuterau ...	...	...	3200	28	...	141½ Pool of dirty water at foot of cliff; remains of a caravanserai.
10.	Robat-i-Khan ...	...	...	3350	10	...	151½ Fortified village, caravanserai in building, good water at 1½ miles.
11.	Kalmarz ...	...	...	4425	15	...	166½ Fair caravanserai, salt water.
12.	Shurab ...	...	...	3350	22	...	188½ New caravanserai, salt water.
13.	Chahar-deh-i-Tabbas ...	...	...	2400	16	...	204½ Village, palms, good caravanserai, sweet water.
14.	Dam-i-dahma ...	...	...	3350	16½	...	221 Poor caravanserai, no provisions, bad water.
15.	Deh Mohammed ...	...	...	3770	11½	...	232½ Village, caravanserai, abundance of sweet water.
16.	Espak ...	...	...	3300	15½	...	248 Village, gardens, caravanserai, sweet water.
17.	Neigenu ...	...	...	2770	20	...	268 Large village, gardens, caravanserai, sweet water.
18.	Hoaz-i-Haji Abbas ...	...	...	2680	10½	...	278½ Water tank of bad water.
19.	Kasimabad ...	...	...	3030	22	...	300½ Caravanserai, a hamlet, water slightly salt.
20.	Fakrabad ...	...	...	2580	18	...	318½ Good caravanserai, village of 200 houses, plentiful supply of tepid water, slightly salt.
21.	Marandiz ...	...	...	2600	16½	...	335 Village of 150 houses, brackish water.
22.	Miandeh ...	...	...	2680	17	...	352 Poor village, filthy caravanserai, salt water.
23.	Faizabad ...	...	...	2900	12	...	364 Town, good caravanserai, gardens, plentiful provisions.
24.	Robat-i-Bibi ...	...	...	3500	13	...	377 Fair caravanserai, walled village, gardens, cultivation, mulberry trees.
25.	Turbat-i-Haideri ...	...	—	...	19	...	396 A large and important town, with good bazaars. British Vice-consul since 1905.

From Turbat to Meshed about 80 miles.

Total : Yezd to Meshed 475 miles.

Mr. Bernard Hobson, M.Sc., in moving a vote of thanks to Mr. Sykes for his interesting Lecture, said:—

In discussing the very interesting paper which Mr. Sykes has just read to us, the first point to which I desire to refer, is that of the meteorological conditions, which favour the formation of deserts. It will be found, generally speaking, that deserts (in the restricted sense of hot arid regions) occur chiefly in the region or zone of the trade winds. These winds, blowing from the north-east in the Northern and from the south-east in the Southern Hemisphere, are travelling from cooler to warmer regions. In this case, and in the case of such other winds, to which the same remark applies, there is no tendency for the wind to be cooled, and hence there is no tendency for any aqueous vapour it may bear to be condensed. So far from depositing any moisture, such winds, unless they encounter lofty mountains, tend to deprive the land of any moisture by evaporation.

Mr. Sykes has referred to the Sahara.

In July¹ a great barometric depression lies with its centre (isobar of 29·4 inches) over the Lut, and extends north-eastward into Siberia, and westward over the Sahara (isobars of 29·8 and 29·9 inches), and air flows into the Sahara both from the north and from the south-west. In January the barometric depression is chiefly to south of the Sahara, and a pressure of about 29·95 prevails in the centre of that desert with higher pressure to north of it; the inflow of air is then chiefly from the north and north-east. The elevation of the Sahara is, in general, not great, mostly between 600 and 1,500 ft., though a broad strip of country between 1,500 and 3,000 ft. crosses it obliquely from south-east to north-west, and rises to 8,870 ft. in the Tibesti Mountains. The greater part of the Sahara lies between the isotherms of 60° and 70°F. in January, and between 80° and 90°² in July, hence there is little elevation to cause condensation of aqueous vapour, and the intense heat is opposed to condensation. The rainfall is under 10 inches (at Cairo 3·4 centimetres = 1·33 inch).

As to the Lut, Mr. D. G. Hogarth, in his book "The Nearer East," p. 109, remarks: "Kerman enjoys only about forty days of anything else than a tropic summer, and over the neighbouring Dasht-i-Lut passes the isothermic line of the world's highest August temperature" [90°F. according to Bartholomew's "Physical Atlas"]. I have already pointed out that in July (and August) the Dasht-i-Lut is the centre of a barometric depression, hence air must flow in, but it flows from cooler to a hotter region, and will deposit little moisture

1. According to Bartholomew's "Physical Atlas," Vol. iii., Meteorology (1899), Plate 12.

2. It must be remembered that both isobars and isotherms are reduced to sea-level.

In January the isotherm of 60°F. crosses the Lut, and the isotherms to the south are higher; the barometric depression is in the Indian Ocean, and the wind in the Lut is a north wind, blowing of course towards the area of low pressure and from the land towards the sea. Nevertheless, according to Mr. Hogarth and Prof. Dr. A. Supan, more rain falls in Persia in winter than in summer; the rainfall at Kerman, according to Hogarth, is less than at Cairo. Hogarth says: "Fortunately, what precipitation of moisture there is on the Iranian Plateau takes place almost wholly in winter, and thus the fall on its numerous heights is stored as snow against the summer." This winter precipitation must, I suppose, be due to the fact that the temperature of the land is not then so excessive and so much above the dew point.

The elevation of the Dasht-i-Lut to the east of Kerman is between 1,000 and 2,000 ft. On the west it is separated by half a dozen chains of mountains over 6,000 ft. in height from the Persian Gulf. On the south, mountains 4,000 to 6,000 ft. high separate it from the Jaz Morian Hamun (lake), which is itself separated from the Gulf of Oman by equally high mountains. On the east towards Seistan the mountains rise to over 6,000 ft. Only on the north of the Lut does the elevation appear to be less.¹

I am disposed to agree with Mr. Sykes that the lower and more level portions of the Lut represent a lake basin or basins which have been filled up with alluvium.

The late Mr. W. T. Blanford, F.R.S. (who died June 23rd, 1905), published, in 1873, in the "Quarterly Journal of the Geological Society," a paper "On the Nature and Probable Origin of the Superficial Deposits in the Valleys and Deserts of Central Persia," in which, after describing the slopes of gravel, sometimes ten miles broad, which cover the bases of the mountains, he says (p. 498): "We have yet to explain the origin of the vast deposits which fill the plains themselves; and the only probable explanation appears to be that these extensive basins were formerly lakes, most of them probably brackish or salt, like the Caspian and the Aral Seas, lakes of Van, Urumiah, Niriz, etc., the fine soil of the plains consisting of silt deposited in such lakes. . . . But for inland seas and lakes to have occupied the interior of Persia, and for large deposits to have formed in them, it is evident that the climate must have been much damper than at present."

I must refer you to Mr. Blanford's paper for further observations, but, on the principle of Sir Charles Lyell, of referring to causes now in action, I should like to draw attention to the account by Col. Sir Henry McMahon of "Recent Survey and Exploration in Seistan" in the "Geographical Journal" for September and October, 1906.

1. See Bathy-oro-graphical map of Iran [Persia] opposite page 48 of Mr. D. G. Hogarth's "The Nearer East." London. 1902.

Seistan lies immediately to the east of the Lut, and is a large basin, some 7,000 square miles in area and without any outlet to the sea, which receives all the drainage of a vast tract of country over 125,000 square miles in area, girt on all sides by high mountain ranges. The principal river of Seistan is the Helmand. It drains a large portion of Afghanistan. It is some 600 miles in length, and its volume on reaching Seistan varies from a normal minimum of some 2,000 feet per second at low river, to 50,000 and 70,000 cubic feet per second in ordinary flood seasons, and to as much as 600,000 and 700,000 cubic feet per second in years of abnormal flood, such as occurred in 1885. This great river ends in a lake, the Hámun of Seistan, 100 miles long and about 15 miles wide, but nowhere very deep, only about 15 feet in the deeper depressions, and not more than 4 to 8 feet over the remaining area at flood time. Its extent rapidly shrinks after the flood season is over, and by winter large tracts of it have dried up. Mr. Ward's observations and calculations show that no less than 10 feet of water is consumed by evaporation in the course of the year. In other words, a lake 10 feet deep is removed by evaporation alone in a year. Nevertheless the Seistan lake is only known to have completely dried up once.

All Seistan, both the high gravel covered plains, and lower lands is composed of alluvial soil, chiefly the ancient and modern deltas of the Helmand. On occasions the amount of silt in the Helmand is as much as one part of silt to 127 parts of water, a figure which very few rivers in the world can surpass. The older alluvial deposits rise far above those of the present day. Col. McMahon says the former level of the Seistan alluvial area must have been at least 400 feet above the present level. He suggests that the solid rock basin has subsided. This appears to me highly improbable; a far simpler explanation is to suppose that the lake at one time rose 400 feet above its present level just as the vanished Lake Bonneville¹ in Utah was once over 1,000 ft. deep, whilst its remnant Great Salt Lake is only 40 ft. deep. If the river Helmand were in the future to greatly diminish in volume its deserted bed might resemble that of the Khusp river in the Lut, to which Mr. Sykes referred. At present the river-bed of the Helmand "presents all the normal features of an ordinary trough of erosion. The alluvial cliffs, 200 to 250 ft. high, which form the walls of this cutting on either side . . . recede northwards and southwards, at the point where the Helmand enters the Seistan delta."

It appears to me that we have in Seistan an existing and striking example of the way in which the Lut was probably formed.

I have much pleasure in proposing a cordial vote of thanks to Mr. Sykes for his lecture.

1. G. K. Gilbert, "Lake Bonneville," United States Geological Survey Monographs, No. 1 (1890).

Annual Meeting of the Society, 1907.

The Twenty-second Annual Meeting of the Society was held in the Lord Mayor's Parlour, Town Hall, on Friday, April 26th, 1907, at 3 p.m.

The Right Hon. the Lord Mayor (Councillor John Harrop) presided, until he had to leave to attend another Meeting, when the Vice-Chancellor of Victoria University took his place.

Among those present were Miss Wilde, Messrs. Joel Wainwright, J.P., J. Stephenson Reid, J. Howard Reed, F.R.G.S., J. McFarlane, M.A., H. Preston, Richardson Campbell, F. Mehl, Councillor J. Snaddon, C. A. Clarke, T. W. Sowerbutts, A. Balmforth, J. W. O'Leary, A. Goodwin, H. Sowerbutts, and others.

The Minutes of the Twenty-first Annual Meeting, held June 12th, 1906, were taken as read, having already appeared in the "Journal" (Vol. XXII., p. 75).

The following telegram was received from the Rev. S. A. Steinthal, F.R.G.S., Chairman of the Council :—"Steinthal regrets being unexpectedly prevented from attending the Annual Meeting, and apologises for absence."

After proofs of the following Report and Balance Sheet had been handed to each Member present, the Lord Mayor took them as read, with the approval of the Meeting.

REPORT OF THE COUNCIL OF THE MANCHESTER GEOGRAPHICAL SOCIETY FOR THE YEAR ENDING DECEMBER 31st, 1906.

The Council are pleased to be able to report that the work of the Society has been carried on during the year with considerable success.

They regret, however, to have to call the attention of the members to the fact that the Society is much handicapped in its work by lack of funds. It will be seen, on reference to the balance sheet, that there has been a loss in the year of about £129, which has, unfortunately, added to the adverse balance of a year ago.

If the operations of the Society are to be continued at the high state of excellence hitherto reached, and if an even higher standard is to be attained, it is imperative that a large increase of members be obtained to overtake the continued leakage by death and other causes, to enlarge the roll of those on the books, and to augment the annual income.

The ordinary meetings have been held weekly during the Winter Session, and the variety of places upon which addresses have been delivered gives some indication of the great fund of information placed at the disposal of the members.

The Council are much pleased with the large attendance at the meetings, which gives evidence of the satisfaction of the members with the present improved accommodation possessed by the Society. The well-attended

gatherings have been encouraging to the lecturers, and have stimulated them to do justice to the subjects with which they have dealt.

The addresses given have been of a varied and interesting character, as will be seen from the following list :—

“A Ramble through an Undiscovered Country and the English Holland.”
Mr. M. W. Thompstone.

“Fairford Church, the Lantern of England.” Mr. C. H. Bellamy, F.R.G.S.

“Scottish Scenery, Song, and Story.” Mr. James Stephenson Reid.

“From Snowfields to Vineyards.” Rev. F. A. Rees (Rhysfa).

“Episodes in a Business Visit to Denmark.” Mr. Matthew Ingram.

“The Rhine and its Legends.” Dr. A. C. Magian, F.R.G.S.

“The Pyrenees and Pyrenean People.” Mr. J. J. Phelps.

“Roman Remains : Their Witness to History.” Rev. S. Hailstone, M.A.

“The Punjaub and its People.” Captain J. Stephenson.

“Chinese Experiences.” Mr. Robert W. Swallow, B.Sc.

“In and Around Hong Kong.” Dr. Robert Gibson.

“A Visit to Japan.” Dr. A. C. Magian, F.R.G.S.

“The Southern Alps of Japan.” Rev. Walter Weston, M.A., F.R.G.S.

“Baalbek.” Rev. P. M. Higginson, M.A.

“South Africa, with the British Association.” Captain E. W. Wakefield, D.L., J.P.

“Jamaica, the Crown of our West Indian Possessions.” Mr. E. W. Mellor, J.P., F.R.G.S.

“Cuba.” Mr. J. Howard Reed.

“To the Southern Pacific Across the Andes.” Captain W. J. P. Benson, F.R.G.S.

“Some South Sea Islands—Reminiscences.” Dr. T. Frank Southam.
(Repeated by special request.)

“Life in Queensland.” Mrs. Louise Hirsch.

“Fifty Wonders of Nature and Art.” Mr. Jas. Stephenson Reid.

“The Growth, Importation, Manufacture, etc., of Cotton, the Staple Trade of Lancashire.” Mr. J. B. Brown.

“Conference of Delegates of the British Association held in London, 1905.”
Mr. J. Howard Reed.

“Orography and History.” Mr. Ernest W. Dann, B.A., F.R.G.S.

Three excursions were arranged during the summer, and were most successful. The thanks of the Society are specially due to Messrs. Joel Wainwright, J.P., David A. Little, and Robert Hamnett for their leadership, and to the two gentlemen first named for their generous hospitality.

The “Journal” for the whole of 1905 and for the first half of 1906 has been issued during the year, in half-yearly parts as suggested in the last Report, and has thus been brought practically up to date. This work has of necessity entailed considerable extra expense, and in consequence the financial deficiency of a year ago has been increased, as previously mentioned.

The Council have with regret to again call attention to a heavy loss of members by death. Among those whose decease is deplored may be mentioned :—

Miss Ellen M. Clerke (London).

Mr. Samuel Armitage.

Mr. Thomas Atkinson.

Mr. Robert Barclay, J.P.

Mr. B. I. Belisha.

Mr. W. H. Cowburn.

Mr. J. Cottingham.

Captain W. Nelson Greenwood, F.R.Met.S.

Mr. R. Maginnis.

Mr. Adam Murray.

Mr. W. H. Rowbotham.

Mr. T. Woodhead.

Messrs. S. Armitage and B. I. Belisha were original members of the Society.

Many additions to the Library, Map Room, and Museum have been made during the year, consisting mainly of exchanges for the "Journal" of the Society.

The Victorians have again given active service, chiefly by lecturing, for the affiliated societies. Their annual report is presented herewith.

The Council gratefully acknowledge the services of Mr. J. D. Wilde, M.A., of Highbury House School, St. Leonards-on-Sea, in kindly drawing up the three sets of questions for the children, which have been issued with the Notices to Members, and also for examining the replies which have been received.

Mr. Wilde's report will be found on page 80.

The Council would be encouraged if a larger number of children of the members would take an interest in these geographical competitions, and make a point of regularly replying to the questions set. They feel that an interesting and useful educational opportunity is lost by those who neglect the questions, and they appeal to the parents to endeavour to stimulate the young people in so useful an effort.

The Council have offered a prize to be awarded on the results of the examinations in Geography at the Victoria University, and desire to acknowledge their indebtedness to the member who has arranged to defray the expense.

The Balance Sheet for the year, with the Report of the Hon. Auditor, is presented herewith.

The Council regret to say that the response to their special appeal in last year's Report for further donations to the Fund for Furnishing the New Premises and for liquidating the outstanding deficiency has been less satisfactory than they had hoped and expected. The fund has only been augmented by a sum of £24. This addition brings up the total of the fund to £365.

It will be remembered that £600 was asked for, and as this would only work out at about £1 per head among the members, if all had subscribed, the Council felt that they would have no difficulty in raising such a sum in view of the great needs of the Society, and the special circumstances under which the appeal was made. As a few generous members kindly contributed

sums varying from £5 to £25, it is quite evident that less than one-quarter of our members have availed themselves of the opportunity of assisting the Society in the time of necessity. As the fund is still open, it is hoped that those who have so far omitted to subscribe will now see their way to do so.

Apart from the exceptional outlay incurred in connection with the "Journal," the expenses for the year have been kept as low as possible, without injury to the progressive work of the Society.

In conclusion, the Council appeal earnestly to the members to do their part in introducing new blood, with a view to larger membership and a consequent increase of income and general efficiency. The great commercial district of which Manchester is the centre is certainly able to place this Society in the position to which it has a right to aspire. It is evident that so far the community referred to has not fully realised the needs of the situation, nor the strong and important call which geography makes upon it. If, however, each member will make it a personal matter to urge the claims of the Society upon his friends there is every reason to hope that the work and usefulness may be much extended, and the future of the Manchester Geographical Society be placed beyond doubt.

THE REPORT OF THE HON. EXAMINER IN GEOGRAPHY.

In presenting the annual report of my examination of the answers to the geographical questions set to your young people during the year 1906, I have first to note the large and gratifying increase in the number of competitors. In 1905 they were sixteen, this year forty-five. I have next to record the re-appearance of the junior class of competitor, two little men of eight and nine years having sent in very creditable papers. Thirdly, I have to notice a development at the other end of the age mark; five competitors exceed the age of sixteen, one even passing eighteen. The quality of the work is distinctly good, the maps especially offering a great contrast to those presented in the initial years of this competition. The written answers also are on the whole very satisfactory. Of course there are some amusing specimens. Patriotism probably inspired the statements that "Oldham is the greatest manufacturing town in the world," and that "Oxford is the oldest University in the world." Your Society, having once selected Ribchester for a visit, will not be surprised to learn that it is "one of the most important towns in Lancashire." Some local consideration must have influenced the writers of the following sentences: "Oxford is noted for its college called Magdalen College. It has also a large University." "Fashoda is one of the most important towns in Africa." "Britain owes Columbia to Ireland." "Derby is noted for its races." "Preston for shipbuilding." Confusion of names is probably responsible for the assertions that "at Tara Sir Thomas Moore composed his poetry called the Irish Melodies," and "while the earthquake was doing its deadly work in the city large waves were flooding the shore of California. One of these was called the Seismic Wave." Careless composition appears in "these States are washed by the Pacific Ocean on the West and on the South by Lower California," and "after

cutting the telephone wires the prison walls were climbed (sic), the warders were attacked, and set free the prisoners." It is rather startling to learn that "India was discovered by the Portuguese about 1550," and it is rather severe upon certain traders to say that Xeres is "noted for its wines and its sherry." Perhaps the most appalling mis-statement is that the Baltic "for the most part of the year is covered in several places by small icicles, which, in cold weather, form icebergs."

Spelling shows much weakness, over eighty common English words appear more or less disguised, mostly in such a way as to show that the writers did not pronounce accurately; mis-spelling of proper names is due to careless copying, and is quite inexcusable in such quantities as have been sent in.

To the competitors I suppose the final result is the most interesting, and to this I now come. Full marks were 300, and all competitors were judged by the same standard. The award is as follows:—

Juniors (under 10).

Arthur Wilson 110—Prize.

Lower Middle Division (10 to 12).

Arabella Constance Pollard 270—1st Prize.

James Broadhurst 255—2nd Prize.

Ernest Wallwork 175—3rd Prize.

Upper Middle Division (12 to 14).

Harold Bentley 265—1st Prize.

Frank Hollingworth 225—2nd Prize.

Mary MacPherson 220

Sam Sharrock 215 } Awards

Reginald Bentley 200 } of

William Neill 190 } Merit.

Herbert Horridge 185 }

Senior Division (14 to 18).

Albert Davenport 290—1st Prize.

Dora Newlove 275—2nd Prize.

Jessie Hampson 272—3rd Prize.

Nettie Hall 265

Edith Newlove 260

Marie Beck 260 } Awards

Eustace Halliwell 235 } of

Mabel Lee 230 } Merit.

Alice Kay 225 }

JAS. D. WILDE, M.A. (Oxon),

Principal of Highbury House,

St. Leonards-on-Sea, Examiner.

REPORT OF THE "VICTORIANS," 1906-1907.

The work of the Victorians, which has been for several years mainly that of delivering lectures in the towns surrounding Manchester, has been carried on during the winter, though to a more limited extent than in previous years. On the first Saturday in the year the usual Christmas party for the children of members was held, and was again very successful. The prizes gained in the Children's Geographical Examination were distributed by Mrs. Eli Sowerbutts. Many of the prizes were kindly presented by Dr. W. J. Hoyten and by J. P. Hughes, Esq., while one member, Professor R. W. Swallow, of the Shansi University again favoured the young folks with a large Christmas cake.

We have to record with regret that the Rev. F. A. Rees, who has been one of our lecturers for several years, is leaving Manchester, which will result in the loss of his valuable services as a Victorian Lecturer. While regretting his departure, we are glad to know that his connection with the Society will not be severed.

The following lectures, all illustrated with specially-made lantern slides, were delivered by the "Victorians" during the Session from October, 1906, to March, 1907 :—

October, 1906.

25—Cheetham Hill (St. Mark's Literary Society). Mr. J. Howard Reed.

30—Bolton (Church House). "A Ramble through an Undiscovered Country and the English Holland." Mr. M. W. Thompstone.

November.

7—Whitefield (Miss Philips). "A Ramble through an Undiscovered Country and the English Holland." Mr. M. W. Thompstone.

December.

7—Nicholls Hospital (Mr. J. S. Reid). "Some Great African Travellers and their Discoveries." Mr. J. Howard Reed.

15—Oldham (Free Public Libraries' Committee). "Rhodesia : Our latest Colony." Mr. J. Howard Reed, F.R.G.S.

January, 1907.

3—Stretford (Rev. F. A. Rees). "From Capetown to Cairo." Mr. J. Howard Reed, F.R.G.S.

7—Leigh (Literary Society). "Rome—the Life of a Great City." Mr. John R. Smith.

14—Farnworth-with-Kearsley P.C.M.I. Society. "British South Africa." Mr. J. Howard Reed, F.R.G.S.

15—Todmorden (Rev. A. W. Fox, M.A.). "British South Africa." Mr. J. Howard Reed, F.R.G.S.

23—Patricroft (Eccles Co-operative Society). "Killarney Lakes." Mr. H. C. Martin, F.R.G.S.

29—Greenacres (Oldham Free Public Libraries' Committee). "Up the Mediterranean." Rev. F. A. Rees (Rhysfa).

February.

4—Levenshulme. "Arctic." Mr. G. H. Warren.

6—Whitefield (Miss Philips). "Water Action Shaping the Earth." Mr. H. C. Martin, F.R.G.S.

25—Dukinfield (Mr. T. H. Gordon, C.C., B.A.). "From Capetown to Cairo." Mr. J. Howard Reed, F.R.G.S.

26—Hale (Mr. T. Burton). "Ancient Egypt." Mr. J. S. Reid.

LIST OF DONATIONS.

(See page 86.)

	£	s.	d.		£	s.	d.
as per first list (see "Journal,"				Miss Leech	1	1	0
Vol. XXII., page 84)	341	15	6	Councillor J. Stevenson	1	1	0
Mr. George Thomas (second) ...	5	5	0	The late Mr. W. H. Cowburn ...	0	10	6
Mr. S. L. Helm	5	0	0	Mr. A. Goodwin (second)	0	10	0
Councillor J. Dean	2	2	0	Sundry Receipts	3	13	0
Mr. A. J. Pidd	2	2	0				

YEAR ENDING DECEMBER 31st, 1906.

(12.)

1012.

	£	s.	d.
To Expenses of Meetings	100	16	7
„ Journal, less Advertisements	126	7	4
„ Rent, Gas, Water, and Insurance.....	151	6	3
„ Salaries	85	10	0
„ Books, Maps, Bindings, and Library	6	18	6
„ Sundry Expenses, Stationery, Postages, Telegrams			
Carriage, Wages, Coal, &c.	108	15	0
„ Commission and Expenses, New Members, and			
Collection of Subscriptions	12	10	6
„ Education Committee's Expenses	0	16	0
	£593	0	2

	£	s.	d.
By Members' Subscriptions—			
Life	10	10	0
Ordinary	393	15	0
Associate	39	18	0
Societies	18	18	0
	463	1	0
„ Bank Interest	0	10	0
„ Balance Deficit on Year 1906	129	9	2
	£593	0	2

BALANCE SHEET, DECEMBER 31st, 1906.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
To Subscriptions paid in advance	32 0 6	By Subscriptions in arrear	21 17 6
„ Amounts owing to Sundry Creditors	175 12 6	„ Cash at Bank	7 14 4
„ Furnishing New Premises and Debt Fund	13 3 3	„ Cash in hand	4 10 6
		„ Cash at Bank—Furnishing, &c., Fund...	13 3 3
		„ Account outstanding	25 8 1
		„ Balance deficit from 1905	1 2 0
		Add loss on year 1906	127 7 8
			129 9 2
		Less amount transferred from Special Fund	256 16 10
			84 8 2
			172 8 8
	£220 16 3		£220 16 3

NOTE.—The Furniture, Fittings, Books, Maps, &c., in the Library, Stock of "Journals," Lanterns, and Slides (which are insured for £1,000) are not taken into account as Assets in the above Statement. There are 34 Life Members, whose subscriptions have been taken as Revenue.

Audited and found correct,

THEODORE GREGORY (F.C.A.),

Honorary Auditor.

April 19th, 1907.

The Vice-Chancellor of Victoria University, in moving the adoption of the Report and Balance Sheet, said that he was sorry to see the amount of the deficit, and hoped that there would be an immediate response to the appeal for each member to subscribe one sovereign. The Geographical Society had established itself, and its work ought to be more widely known, although in some quarters it was well known, and was proved to have done good work. It was not a Society of mushroom growth, but had steadily developed its work. It had a local habitation in St. Mary's Parsonage, which served to some extent the purposes of a club. It was a convenient place, and with its library and collections was an institution that might be more widely used than it was by those who wished for information about questions affecting trade or their travels. The Society served, further, as a valuable means for the interchange of information among those who had special knowledge. The Society was of great value in influencing public opinion, especially of those engaged in educational matters. Geography was the basis of all knowledge, whether administrative, civil or military. In conclusion, the educational side of the work of the Society was spoken of. Lectures were given on subjects of the greatest interest by those who could speak at first hand, and there was, of course, a great influence exerted through their scheme for the examination of children. Speaking from his own early experience of the value of Geographical study, the Vice-Chancellor added: "It makes the mind orderly, the imagination vivid and true, and it aids the memory. I do not believe history ought to be taught without the atlas open before you."

Mr. J. Howard Reed, F.R.G.S., in seconding the motion, also referred to the adverse balance, and spoke of the necessity of stimulating interest in the Society and increasing the membership, which was now almost six hundred. Manchester had been founded by geographers, and therefore why did not Manchester men and women support the Society in common with other societies. So far they were too busy with their commercial concerns to interest themselves in the Society, but the time would come when its importance would be brought home. Its work was an Imperial work for the benefit of the community at large.

The Right Hon. the Lord Mayor, in supporting the motion, said that there was still much ignorance of Geography in the country, as evidenced at the time of the South African War, and great need for a Geographical Society to spread a knowledge of the subject.

The Resolution that the Annual Report and Balance Sheet be adopted was passed unanimously.

The Vice-Chancellor then took the Chair.

Mr. J. Stephenson Reid, in moving the next resolution, spoke, as an old member, in very appreciative terms of the services of the officers and Council during the year, and of the special services given by the members of the Executive Committee.

Mr. A. Balmforth, as a new member, congratulated the Council on the

very successful series of lectures given, and seconded the following resolution, which was carried unanimously :—

“That the best thanks of the Society be given to the Officers and Council for their services during the year.”

Mr. Richardson Campbell moved, Mr. J. W. O’Leary seconded, and it was resolved :—

“That the Officers and Council be re-elected with the following alterations : Mr. H. Woolley, F.R.G.S., to be a Vice-President and Messrs. G. Ginger, F. S. Oppenheim and J. Stephenson Reid to be added to the Council.”

List of Officers and Council as elected :—

President :

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

Vice-Presidents :

His Grace the DUKE OF DEVONSHIRE, K.G.
The Right Hon. the EARL OF DERBY, K.G.
The Right Hon. the EARL EGERTON OF TATTON.
The Right Rev. the BISHOP OF SALFORD.

The Right Hon. the LORD MAYOR OF MANCHESTER.
His Worship the MAYOR OF OLDHAM.
His Worship the MAYOR OF SALFORD.
The VICE-CHANCELLOR OF VICTORIA UNIVERSITY.
The Rt. Rev. MONSIGNOR GADD, V.G.
Sir W. H. HOULDSWORTH, Bart.
The Hon. W. ROTHSCHILD, M.P.
Sir C. E. SCHWANN, Bart, M.P.
Sir H. F. DE TRAFFORD, Bart.
Sir FRANK FORBES ADAM, C.I.E.
Sir W. H. HOLLAND, M.P.
Alderman Sir BOSDIN T. LEECH, J.P.
Sir JOSEPH LEIGH, J.P.
Sir WILLIAM MATHER, J. P.
Mr. FREDERICK BURTON.
Mr. J. F. CHEETHAM, M.P.

Professor T. H. CORE, M.A.
Mr. WILLIAM CROSSLEY, M.P.
Prof. W. BOYD DAWKINS, J.P., F.R.S.
Alderman JAMES DUCKWORTH, M.P.
Mr. J. G. GROVES, J.P.
Mr. J. S. HIGHAM, M.P.
Mr. E. W. MELLOR, J.P., F.R.G.S.
Mr. HARRY NUTTALL, M.P., F.R.G.S.,
Vice-Chairman of the Council.
Mr. S. OPPENHEIM, J.P., Consul for Austria-Hungary.
Mr. J. HOWARD REED, F.R.G.S.
Mr. C. P. SCOTT, J.P.
Mr. H. SOWLER, J.P.
Rev. S. A. STEINTHAL, F.R.G.S.,
Chairman of the Council.
Mr. J. D. WILDE, M.A.
Mr. HERMANN WOOLLEY, F.R.G.S.

Mr. F. ZIMMERN.

Trustees :

Mr. H. NUTTALL, M.P., F.R.G.S. | Mr. SYDNEY L. KEYMER, F.R.G.S.
Mr. E. W. MELLOR, J.P., F.R.G.S.

Hon. Treasurer : Mr. DAVID A. LITTLE.

Hon. Secretaries : Mr. F. ZIMMERN, Mr. J. HOWARD REED, F.R.G.S., and
Mr. C. A. CLARKE, Hon. Sec. Victorians.

Council :

Mr. J. E. BALMER, F.R.G.S.
Mr. JAS. BARNINGHAM.
Mr. G. T. BOWES.
Mr. J. C. CHORLTON, J.P.
Mr. C. COLLMANN, Consul for German Empire.
Colonel H. T. CROOK, J.P., C.E.
Mr. G. GINGER.
Major E. W. GREG, J.P., C.C.,
F.R.G.S.
Mr. Councillor T. HASSALL, J.P.

Mr. A. J. KENNEDY, F.R.G.S.
Mr. N. KOLF.
Mr. J. McFARLANE, M.A.
Mr. H. C. MARTIN, F.R.G.S.
Mr. T. C. MIDDLETON, J.P.
Mr. F. S. OPPENHEIM.
Mr. R. C. PHILLIPS.
Mr. J. STEPHENSON REID.
Mr. Councillor JOHN SNADDON.
Mr. T. W. SOWERBUTTS, A.S.A.A.
Mr. GEORGE THOMAS.

Mr. C. A. Clarke moved, Mr. T. W. Sowerbutts seconded, and it was unanimously resolved :—

“That the best thanks of the Society be tendered to Mr. Theodore Gregory, F.C.A., for his services as Hon. Auditor, and that he be re-elected.”

It was moved by Mr. Joel Wainwright, J.P., seconded by Mr. J. Howard Reed, F.R.G.S., and resolved unanimously :—

“That the best thanks of the meeting be tendered to the Lord Mayor for the use of his parlour, and more especially for his kindness in presiding.”

The kind services of the Vice-Chancellor in taking the chair in place of the Lord Mayor were acknowledged in a similar manner.

The Vice-Chancellor gave a suitable response.

Proceedings of the Society.

April 1st to June 30th, 1907.

The 755th Meeting of the Society was held in the Geographical Hall on Tuesday, April 9th, 1907, at 7-30 p.m. In the chair, the Rev. Fred A. Rees.

The Minutes of the Meeting held on March 26th were taken as read.

The Election of the following Ordinary Members was announced :— Messrs. T. von Zabern, R. Emmett Hailwood and J. E. Collier.

The death was mentioned of Alderman James Greenwood, J.P., of Burnley, who has been a member for twenty years, and it was resolved that the sympathy of those present be conveyed to his relatives in their bereavement.

Mr. John R. Smith gave some "Interesting Reminiscences of the Life of William Cowper (poet), his Rural Walks in and about Olney, with Quotations from his Works." The address was illustrated with many Lantern Slides.

Mr. D. A. Little moved, Mr. C. A. Clarke seconded, and it was resolved, that the thanks of the Meeting be given to Mr. Smith for his interesting address.

The 756th Meeting of the Society was held in the Geographical Hall on Tuesday, April 16th, 1907, at 7-30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting held on April 9th were approved.

The death of Mr. Richard Armistead was mentioned, and a resolution was passed unanimously that the sympathy of the Members present be conveyed to his relatives in their bereavement.

The Election of Mr. R. A. Staniforth as an Ordinary Member was announced.

Mr. R. Ernest Hope (late of Lokoja) lectured on "With Pen and Camera in Nigeria." The address was illustrated with a large number of original Lantern Slides.

Mr. J. Howard Reed, F.R.G.S., moved, and Mr. John Godbert seconded, a cordial vote of thanks to Mr. Hope for his very interesting address, and the resolution was passed unanimously.

ANNUAL DINNER.

The Annual Dinner of the Society was held at the Albion Hotel on Friday, April 26th, 1907, at 7 p.m., with Mr. Harry Nuttall, M.P., F.R.G.S., in the chair. There were also present Colonel H. T. Crook, J.P., Councillor J. Snaddon, Messrs. H. Woolley, F.R.G.S., J. E. Balmer, F.R.G.S., H. C. Martin, F.R.G.S., J. Howard Reed, F.R.G.S., T. W. Sowerbutts,

A.S.A.A., C. A. Clarke, R. C. Phillips, A. Balmforth, T. Kyle Dawson, H. Forsyth, and J. Howard Hall, Mr. and Mrs. E. Hoyle, Messrs. H. Preston, J. Stephenson Reid, G. H. Seed, John R. Smith and others.

After the usual loyal toasts had been honoured, the President, H.R.H. the Prince of Wales, being specially mentioned, Mr. Harry Nuttall, M.P., F.R.G.S., proposed: "The City of Manchester and Borough of Salford." He referred to the recent deputation to the Prime Minister with regard to the development of Northern Nigeria as an example of the importance of the study of Geography in connection with such a centre as Manchester. The British Cotton Growing Association believed, from investigations made, that Northern Nigeria would grow all the cotton, middlings and good middlings, that Lancashire, and in fact all the Cotton Mills in the world, could consume. The importance of the deputation was, therefore, apparent, and as a result of the pressure which had been continued for a long time on the Government, they had decided to send out a representative to Nigeria to ascertain the feasibility of constructing a railroad from the Coast.

Colonel Crook, in proposing "The Manchester Geographical Society," said that they were not in any sense specialists, and for his part he thought they ought not to follow those who would make of Geography a high and dry science. This was a tendency to be resisted. They ought to instil into the rising generation that spirit which he thought was more conspicuous in past times—that of adventure and travel. There were many young men in Manchester offices who had no desire to go out of their own country. There were so many pastimes and amusements now in this country that young men were not driven abroad in search of change of life as they were fifty or one hundred years ago. Such work as that Society's ought to revive that spirit of adventure which had formerly sent our young people forth in pursuit of knowledge and business to the uttermost ends of the earth.

In responding, Mr. J. Howard Reed said this great commercial city of Manchester (including therein the Borough of Salford and the surrounding district) should put the Society into such a strong position as to enable them to continue in their good work and to launch out into other schemes of development. He said: "Our work has been eminently successful, and our records show that the Society has carried on this useful work in the years that have already gone. We have not done all we wish to do, but if we could only do something to tickle the imagination of the great commercial peoples of Manchester, who, due to the work of Geographers, have been able to accumulate their present interests, it would only be a few days before the Society would be in a flourishing condition."

Mr. Hermann Woolley, F.R.G.S., proposed: "The Royal and other Geographical Societies," to which Mr. J. E. Balmer, F.R.G.S., responded.

Mr. Reed moved, Mr. Phillips seconded, and it was resolved that the seven Colonial Premiers be elected Hon. Members of the Society.

Councillor Snaddon then proposed the final toast of "The Chairman," who responded in a suitable manner.

The 758th Meeting of the Society was held on the site of the Roman Camp, at Castlefield, Manchester, on Saturday, April 27th, 1907.

Mr. Joseph J. Phelps met the Members at 3 p.m., and led them to the different parts of the site, first showing them a portion of the eastern Roman wall under a railway arch, where, though somewhat protected, it still needs further care. He described the various trenches dug during the last few months under the direction of Members of the Excavation Committee of the Classical Association, the reasons for their construction, and the results obtained.

Mr. Phelps then, by the aid of diagrams, explained the known position of the walls, etc., of the Roman Castrum, and the value of the various sections and finds which may aid the endeavour to gain further information as to the History of the Site.

He finally gave a very interesting account of some of the most characteristic of the various objects found.

Mr. J. Howard Hall moved, and Mr. Ward seconded, a resolution that Mr. Phelps receive the sincere thanks of those present for the very interesting way in which he had described what had been done to increase our knowledge of the Roman Fort at Manchester. The resolution was passed unanimously, and Mr. Phelps made a suitable response.

The 759th Meeting of the Society was held in the Victoria Hall, Glossop, on Saturday, June 29th, 1907.

Mr. R. Hamnett, Hon. Secretary of the Glossop and District Antiquarian and Natural History Society, met the Members at Glossop Station, and the party proceeded to the Victoria Hall, where the various objects found at Melandra have been labelled and arranged in cases, which greatly facilitates their inspection and study. A very profitable couple of hours was spent listening to Mr. Hamnett's very interesting account of the finds.

After tea, Mr. S. Massey moved, Mrs. A. de Bolivar seconded, and it was carried unanimously, that a hearty vote of thanks be tendered to Mr. Hamnett for his kindness.

Mr. Hamnett, in responding, gave some particulars of the recent history of Melandra, and spoke of his early attempts at excavation and how the lease was obtained.

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Reviews.

"A Book of the Cevennes." By S. BARING GOULD, M.A. London: John Long, 1907.

The district in Central France, known as "The Cevennes," is not so well known to English tourists as many other parts of the Republic, but it is rich in many attractions, offering varied geological phenomena of great interest, wild and lovely mountain scenery and places filled with historical associations, which carry one's mind from the stone age through the varied stages by which mankind has reached its present civilization. With sympathetic spirit, Mr. Gould records what he has seen, and tells the tale of what has happened in the places he has visited, and has illustrated his book with eight coloured plates and six reproductions of photographs, giving his readers a most attractive conception of the picturesque character of the country and its inhabitants. We have been struck with the impartial spirit with which the author tells his tale of the persecutions and religious wars which make the historical associations of the Cevennes mainly tragic and have gratefully marked the humour which has led him to brighten the tale of human cruelty now and then with legends of amusing though credulous superstition. We have noticed here and there slight errors, and curiously arranged paragraphs, which suggest that the volume might have been improved, by a more careful revision of the final proofs, and we have never failed, as time after time we turned to the sketch map given, to regret the absence of a fuller map to enable one to localize the places visited, the relative positions of the various mountain ranges, and the courses of the rivers which have cut their way through them. Mr. Baring Gould, in his preface, tells his readers that his work is not a guide-book, but the interest it cannot fail to arouse, will, we feel assured, send many to the Cevennes, and promote the sale of guide-books to those who wish to see the localities about which they have been reading so fascinating and instructive a narrative.

S. A. S.

"Handy-Volume Atlas of the World." By E. G. RAVENSTEIN, F.R.G.S. Seventh edition, revised to date. London: George Philip & Son, Ltd. 1907. 3s. 6d.

For a well-compiled, illustrative and interesting book, the new edition of Philip's "Handy-Volume Atlas" speaks for itself. The statistics have evidently been carefully compiled, while the maps are excellent.

The whole book is one which can be easily and clearly followed by anyone who may consult it.

The Atlas, as it stands, in the hands of an International Commercial Traveller, or of an ordinary Tourist, would be most useful; but it might be made invaluable if a little information on the coinage of different nations could be added in future editions.

The volume is well bound, light, of such a size as to be easily portable, and is altogether one which will, we are sure, often prove a friend in need.

J. H. R.

"Map of the Gold Coast." Published by the authority of Sir JOHN PICKERSGILL RODGER, K.C.M.G., Governor, under the direction of Major F. G. GUGGISBERG, R.E., F.R.G.S., Director of Surveys, Gold Coast. Engraved and Printed by Messrs. W. and A. K. Johnston, Ltd., Edinburgh and London, Sheet 72, K. iii., March 1907. Price 2s.

Major Guggisberg has shown in this, the first sheet of the Gold Coast Survey, what can be done in the way of producing a map expeditiously, and with all the accuracy essential to the scale without awaiting the expensive and tedious process of triangulation. It is a specimen of a class of work which has been almost entirely neglected, especially in the colonies and Dependencies of the British Empire. Mainly through the influence and example of the Ordnance Survey any method less accurate than triangulation had come to be looked upon with contempt, so that there has been in new countries nothing to fill the gap between the small geographical sketch and strictly local land surveys.

The scale of the map is $\frac{1}{125000}$ or a very little more than half-an-inch to the mile. For a map of this scale there never was any necessity to wait for a triangulation, for a triangulation really provides no more information than can be obtained with almost equal accuracy by traverse and plane table surveys based upon a number of astronomically ascertained positions.

The map is, of course, at present more or less a skeleton map, but the difference between what is absolutely surveyed and what is conjectural, is carefully indicated. The gaps can always be filled in in future editions.

The printing is tastefully done in three colours, an extensive explanatory table of conventional signs, etc., and a useful note on the orthography and pronunciation of the names are given in the margin. The demarkation of the various concessions, made to companies and individual adventurers, appears unnecessarily heavy. As the concessions run very generally with the rivers, the detail of the rivers is somewhat obscured; on the other hand, it may be urged that the demarkation of the concessions is one of the chief reasons for making the map.

On the whole, Sir John Pickersgill-Rodger, the Governor, and Major Guggisberg are to be congratulated upon this enterprise.

H. T. C.

FARM LIFE IN NEW ZEALAND.

(By Kindness of Mr. Joel Wainwright, J.P.)

Te Hopai, Kahutara, Featherston.

New Zealand, February 14th, 1907.

Dear Mr. Wainwright,—I was very pleased to receive your Christmas card. It is pleasant, when living such a long way from home, to be so kindly remembered. I hope you spent an enjoyable Christmas, and will have a Happy New Year.

After having spent nearly a year in the "back-blocks," I have come into a settled district for a change; and, needless to say, in many ways it is very much pleasanter. This is a pretty bit of country here. A wide, flat valley runs from Featherston to the sea, about thirty-five miles. It is bounded by a high range of hills—the Rimutaka on the west side, and a lower range on the east, and along the foot of the Rimutaka Hills the Wairarapa Lake lies. The lake is about twelve miles long, and a good deal of the land, which is now running stock, was formerly covered with water. The lagoons are covered with wild swans (the black Australian) and ducks; the latter are getting less numerous each year.

On one portion of the farm there is a 12-horse power oil-engine, to pump off the water in winter. The reason for this is, that when the river gets high, the flood-gate of the drain has to be closed to keep the river out, and the drain water can't get away unless it is pumped out. A piece of the swamp land is taken in each year, the coarse grass burnt off, and the grass roots dug off and carted away. It is then ploughed and sown in rape or turnips for a season or two, and then turned into pasture in English grasses.

This is entirely a fattening farm. Old ewes are bought in March or April, they lamb in the spring, and the first lambs go away fat from their mothers about December; the mothers follow the lambs about a month later. The lambs are about 13s. 6d. a head, the ewes about 15s., after cutting at least 5s. of wool. The ewes cost about 14s. a head in the first place, and as they average more than a lamb per ewe generally in this flat country, that leaves a profit of £1 per ewe by the lambs and wool, and a little over to cover loss.

The place at present runs 1,200 ewes. Besides this, after the BRED lambs have all gone, about 2,000 BOUGHT LAMBS should be fattened off, on rape; by the beginning of winter they make a profit of about 4s. a head. Also each year about 300 bullocks are turned off fat, at a profit of about £2 per head. The farm is all dead flat

land, and subject to floods, as it lies below the level of the river banks; a good portion of it has now been banked up, and all of it will be so in time. The whole is four miles wide, and is surrounded by shallow lagoons. There is one big river, the Ruamahanga, and a few smaller ones flow across the valley, and empty into the lake. The farm is bounded by the Ruamahanga River for about five miles, from the main road to where the river flows into the lake. The river is fairly wide and deep, and has practically no current down here. It is full of large trout, averaging about $2\frac{1}{2}$ lbs., and also contains numerous eels and flounder, a fish very much like plaice, which we catch in nets.

The farm contains about 600 acres in English grasses, 700 acres coarse swamp grasses, 700 acres native flax, which runs a small amount of stock, and on which a flax mill pays a good royalty for the right of cutting. There are also about 1,000 acres of the shallow lagoons which I mentioned. In a few years these will probably be drained off, and make first-class land. The district is subject to floods, but as it is very rich land, it has its compensations.

The native flax is a fine plant; it has a growth somewhat similar to the sweet-flag which grows round ponds at home, only it is much taller and stronger. It has a fine red flower, which grows on a long stalk. There is another very pretty reed which grows among the flax called "Toi-Toi." It has a big waving top, like prairie grass, which is very plentiful here.

The fishing hereabouts is very good, but I have hardly done any. I am generally too tired in the evening, and on Sundays I usually go out to friends. I was fishing last Sunday, but caught nothing. I had my cast broken by a fish about 5 lbs. weight.

I must conclude now, hoping you are keeping well.

I remain,

Your young friend,

G. L.

The Journal

OF THE

Manchester Geographical Society.



EXPERIENCES IN EAST AFRICA.

By the Rt. Hon. Lord HINDLIP.

(Addressed to the Society, in the Geographical Hall, on Tuesday.

March 26th, 1907.)

THE East Africa Protectorate is bounded on the South by German East Africa, on the East by the Indian Ocean, on the North by Italian Somaliland and Abyssinia, and on the West by Uganda.

Until about the last two years, the Protectorate has been only occasionally brought to the notice of the public by various incidents such as the Uganda Mutiny, the transfer of the country from the old East Africa Company to Imperial control, and a question or so in the House of Commons. But this is geography, which I understand is now a matter of no importance.

A pleasant surprise awaits the traveller when his ship brings him in sight of the East African coast near Mombasa and for a long distance southwards. Instead of the arid waste which he has seen in passing through the Suez Canal and the Red Sea, and the Somaliland coast from Guardafui, or possibly the bare hills on the South African coast, he will be inclined to wonder whether by some mischance his ship has brought him, not to

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the African coast, but to some rich tropical island in the East Indies. Cocoonut trees are growing in profusion, while at Mombasa and other old Portuguese posts, mango trees are fairly plentiful. The whole coast is covered with green trees and vegetation, which stretch into a long line of hills running parallel with the coast.

Mombasa itself is an island, and as may be gathered from its native name, Mvita, meaning the island of war, was the scene of many sanguinary struggles between the Portuguese and the Arabs from about 1500. The remains of ancient fortifications still exist all along the East coast wherever the old settlements were made.

Mombasa harbour is picturesque but small, the chief port for the Protectorate now being on the other side of the island and called Kilindini, one of the finest of many fine harbours along the coast, and capable of holding a large number of big ships.

The climate of Mombasa reminds me more or less of Colombo, and I do not think that it can be considered unhealthy; in fact, as there is practically no proper division between the European and the native towns, and the water supply consists solely of wells in a coral formation, and of rain water conserved in tanks, it is almost a wonder that there has not yet been a disastrous outbreak of disease.

Mombasa, and a strip of 10 miles in breadth, the whole length of the coast of the Protectorate, are still a portion of the dominions of the Sultan of Zanzibar, and it is the coast belt for a distance of some 20 miles from the coast which I think will attract a considerable amount of attention, during the next few years, owing to its richness and its suitability for tropical products such as rubber, cocoanuts, fibres, cotton and such like.

In German East Africa, at and near Tanga, which is only a short distance from the Southern frontier of the British Protectorate, and along the Usambara railway which runs a short distance from Tanga towards the district of Kilimanjaro, very great success has been met with by the business-like German planters, who, equipped with a thoroughly scientific

knowledge of the subject, have been planting chiefly rubber and sisal, and it is owing to the data and facilities offered in German East Africa, such as particulars of soil, rainfall, etc., that a considerable amount of capital will, I think, be attracted there, which should and ought, with a little care and encouragement, be directed to British territory. Immense strides have been made by the Germans in rubber and sisal cultivation: a representative of a City firm told me the other day that owing to the scientific methods applied by the Germans to the sisal fibres, the sisal from German East Africa was worth £35, and I have heard, £38 a ton in London, as against £30 for Mexican and £22 for Indian, a contrast between German and other methods.

Accurate statistics of rainfall, etc., are deficient in British East Africa, or if existent, the majority of their light is carefully hidden under a very large bushel, and several would-be investors have told me that they abstained from investing owing to the absence of data.

Passing from the South of the coast belt northwards past Mombasa, the Tana river, with the exception of the first eighty miles of its course, where mosquitos exist in myriads, appears to present great possibilities in the way of products of a tropical nature, including cotton, and in many respects seems to have characteristics similar to Egypt and the Nile. Mr. Fawcus, who has only quite lately been up the Tana, attaches great importance to its possibilities.

Lamu, an island a short distance North of the false mouth of the Tana, the real channel being silted up, is at present the headquarters of the trade of this district. All along the coast from the Tana southwards into German territory, a considerable and profitable trade is done in Mangrove bark, which is shipped, I believe, to Germany and to America, the export of this has increased by 100 per cent. during the last 12 months.

Further North again, almost at the northern limit of the coast lands of the Protectorate, is Kismayu, near the mouth of the Juba river, a river which will probably in the future play a

not unimportant part in the development of Southern Abyssinia and the intervening country inhabited by the Somalis.

To return to Mombasa from the coast, I propose briefly to describe the country through which the Uganda Railway, which has received such severe criticism, passes.

Leaving Mombasa, the railway crosses to the mainland by the Makupa bridge, which consists of 17 spans of 60 ft. girders on cylinder piers. After the first 20 miles or so, the breadth of the coast belt, the bush becomes thicker and interspersed with many fibrous plants, and water is very scarce. With the exception of Voi, in the Teita district, there is nothing of much interest until Makindu is reached, 209 miles from the coast and at an elevation of 3,280 ft., and for the next 58 miles to Kiu there is some very fair grazing land, which should do well for indigenous cattle, goats and sheep, but here again water is a difficulty.

Personally I believe that water could be supplied by means of artesian wells, which should tap some of the underground rivers said to exist somewhere under this part of the country. One or two somewhat abortive attempts at boring have been made by the railway people, but I do not know to what depth.

Just before the train reaches Voi (mile 103) the traveller may expect to get his first sight of East African big game. The last time I went up the Railway, about 18 months ago, a small herd of giraffes was seen close to the track.

Voi (elevation 1830 ft.) is practically the end of the Taru desert, which used to form, in the old days, the *bête noir* of the traveller from the coast to the interior. From here there is a caravan road, over which I believe motor wagons now run to Taveta and the German district round Kilimanjaro.

Several concessions have been taken up near Voi for the gathering and cultivation of fibres, the Voi river naturally attracting people to this part.

Dinner is usually at Voi, which is reached as a rule shortly after dusk, and the country traversed during the ensuing night

is not of a very attractive character. In the morning the first object of interest which is sometimes visible from the train, is the snow-capped peak of Kilimanjaro, rising in solitary grandeur from the level plain, and from here to Nairobi, through the Kapiti and Athi plains, the line runs through what is practically an enormous zoological garden. The herds of harte beeste, wilde beeste, zebra and gazelles pay but little attention to the passing train, while lions have not unfrequently been seen by passengers. But sometimes supposed lions have turned out to be Baboons. The whole of the district south of the Railway, practically from Voi to Nairobi, forms the game reserve, which I hope will be jealously guarded for some time to come.

Near Machakos (mile 276), elevation 5,250 ft., which I consider to be the beginning of the white man's zone, considerable success has attended the efforts of an old pioneer of the country, in cultivating fruit, the apples grown there being in very great demand.

The Kapiti and Athi plains, extending from mile 280 to Nairobi at mile 328, are chiefly remarkable for the quantity of game, and for the myriads of ticks which practically take possession of oneself, one's clothes and bedding, and in the wet season when the grass is long, make life almost unbearable.

Nairobi, at an elevation of 5,450 ft., is now practically the capital of the Protectorate. It is unfortunate that the town should have been built where it was; a mile or two into rising ground would have made all the difference, as owing to the lack of fall for the necessary drainage, the town will always present enormous difficulties to the sanitary authorities and the department which has charge of the streets, if it is allowed to remain where it is.

The town, apart from the residential portion, has been condemned over and over again by, I should imagine, every medical officer who has been even near it, and a sanitary engineer has been sent out this year by the Government to make a report. The headquarters of the Railway, troops and Land Department, are here, and, with the exception of the Customs, which are in-

separable from the coast, all the Government headquarters will, no doubt, be established here shortly.

Plague has appeared on more than one occasion, and is likely to do so more frequently in a more virulent form until native markets, Indian bazaars, and other places where filth collects, are properly supervised and placed under stringent sanitary regulations and entirely removed from the European quarter of the town.

Nairobi, during the four years or so that I have known it, has made rapid progress. Tin shanties and wooden shacks now give way to more solid buildings of stone of good quality, which is plentiful in the vicinity. Cricket and football grounds, a racecourse, and an agricultural show, all find their place in or near the town. Hotels, which four years ago were practically non-existent, have sprung up, and really excellent accommodation can be obtained.

The value of land in Nairobi has increased enormously, and although it is difficult to believe that the present inflated prices are justified, there is apparently at present no sign of a slump. Land which a few years ago was practically valueless, now changes hands in many instances at from £50 to £80 an acre. Town plots in main streets have risen from £100 early in 1906 to, in one or two cases, £500.

I think the chief object of interest at Nairobi is the French Roman Catholic Mission, a few miles out of the town. Here, under the direction of Father Burke, a very considerable acreage has been put under coffee, which has done very well, and I believe, commands good prices on the French market. Coffee throughout the Kikuyu district appears to do well, the trees beginning to bear in about two and a half years. Like everything else in a new country, it has its detractors, and some say that the trees will exhaust themselves too quickly; personally I am inclined to doubt this.

Almost every conceivable species of garden produce is grown at the Mission in profusion, and I have seen peach trees that

were only three years old and grown from stone, literally weighed down with fruit.

Some natives are being taught carpentering and other useful crafts, and in another part of the Mission a school for European children is conducted.

Some 50 miles South of Nairobi, at an altitude of about 2,500 ft., lies the lake of Soda, called by the natives Lake Magadi. Although many lakes in the surrounding country contain soda, none of them contain it to such an extent as this one. The whole surface of the lake is covered with a coating of soda, which, I believe, is from six to eight feet thick, and which is continually increasing. The East Africa Syndicate own a concession to work this soda, but so far little has been done with it.

Leaving Nairobi, the Railway begins to climb the Kikuyu Escarpment, and it is here that the beautiful and attractive country begins. Signs of colonisation are everywhere visible on both sides of the line, snug homesteads springing up and land being brought into cultivation.

After cresting the Kikuyu Escarpment, the track brings one down to the fine grazing land round Naivasha, Gilgil, and Elmenteita, which used to form a portion of the grazing lands of the Masai and which have been eagerly snapped up by settlers.

Near Naivasha is the Government stock farm, which I think is now certainly one of the best, if not the best thing in the country. Here Mr. Hill shows with great pride the results of the experiments in stock raising and crossing of the native cattle and sheep with imported stock, and I think the results are on the whole satisfactory.

The first cross with a native ewe and imported merino, from the point of view of the wool, is certainly encouraging. The carcase, as is only to be expected, is poor. The second cross is, I think, disappointing, probably owing to the fact that the difference between the first cross and the native animal is so marked. The merino sheep which were brought from South

Africa to the Government farm, although I believe in bad condition and suffering from scab on arrival, have on the whole done well. The crossing of the native cattle with imported stock, Herefords, Shorthorns, and Guerneys, has also been so far successful, though it remains to be seen whether it will be better to cross with imported stock, or whether, as I understand is the opinion of many from South Africa, it will be better to breed up by selection from the pick of the native cattle, which appear to be more or less immune from many diseases.

The native cattle are small, but taking to the eye, and are extraordinarily docile. Their yield of milk is very small, but its quality makes up to a large extent for its quantity, and can almost be compared to the quality of the Jersey.

As can be seen in the photo, the hump entirely disappears in the first cross. The cross is a much bigger animal, a calf a week old being nearly the same size as a native calf of four or five weeks.

At Gilgil, the head station of the East African Syndicate, a flock of some four or five thousand merino sheep, which they imported from Australia at the beginning of the year, can be seen from the train. I do not know how these sheep have done, but it is to be sincerely hoped that this bold experiment will prove a success, as a wool industry would be the making of the country. There is no doubt that if sheep are to succeed, they will do so on the land between Naivasha and Nakuru, where the grass is short and sweet, having been heavily grazed by the Masai flocks. The rainfall from Naivasha almost to Nakuru is not sufficient for agricultural purposes, and cultivation, if attempted, would mean irrigation.

The next station to Elmenteita is Nakuru, at an elevation of 6,000 feet, situated some 3 miles from the northern shore of the lake of that name, and this in the future is likely to be a large agricultural centre: it is practically the end of what is at present considered the best country for sheep.

Blue gums and black wattles planted some three and a half years ago have grown to a very considerable height, and it is

confidently expected that a large industry will be formed, as in Natal, for the growing of black wattle and the exportation of its valuable bark.

To the north of Nakuru and Gilgil, at a little distance from the Railway, is the Likipia Escarpment and Plateau, now a reservation for the Masai, a nomadic tribe with a great reputation for bravery, which personally I believe to be exaggerated. Their favourite occupation has always been that of raiding tribes weaker than themselves, and stealing cattle, which latter occupation they indulge in too frequently, and it will undoubtedly give rise to serious trouble if their thieving propensities are not checked. They are used by the Government as allies on their punitive expeditions, a form of policy by no means generally accepted, as in the view of many it tends very strongly to maintain a spirit of tribal animosity.

North of Nakuru, and West of the Likipia Escarpment, stretches a portion of the Rift Valley to Lake Baringo, approximately 100 miles from the Railway. The country round Baringo used to be ideal for the sportsman, but it is unsuitable for settlement, dry except in the rainy season, and hot. Game was very plentiful. I remember one day some four years ago, seeing nine different species, all within an hour's walk from my camp, and two more species could probably have been found without any difficulty. Since that time, however, this district has been heavily shot over, and I believe a good deal of the game has been driven away.

Lake Baringo itself is worthy of a little notice. It swarms with fish, and on, I think, two islands in the middle of the lake are hot springs where cooking can be done without any difficulty. Crocodiles abound in the lake, but for some reason or other, they have never been known to interfere with the natives, who, it is not an exaggeration to say, practically kick them out of their way. I have seen them fishing up to their necks in water, paying no heed to the crocodiles.

North of Baringo, and slightly West, is the country inhabited by the Sûk, a very friendly pastoral tribe who resemble

very much the Karamojo and Turkhana. I have seen it stated that the Sùk claim relationship to the Masai, but personally I do not think this is likely to be correct: their dress and appearance have no resemblance to the Masai, neither have their customs.

Between Nakuru and Njoro (elevation 7,000 ft.) on the South side of the line lies the property in which I am interested.

North of the Railway, beginning at Njoro, is Lord Delamere's grant of land.

As Nakuru is left, the Railway commences to climb up the Mau Escarpment; at Njoro, a distance of 12 miles, it has climbed 1,000 ft.

Shortly after, and near Elbergen, some 16 miles from Njoro, where Lord Delamere has established a saw mill, the scenic effects in the forest are very grand. Giant junipers rear their heads into the mist, which prevails at this high elevation. Dank masses of creepers and lichens cling to the moisture-laden branches, and long streamers of the grey beard moss wave mournfully in the wind. From far down in the dark rifts and gorges, almost shut out from the light of day by the dense vegetation, comes the sound of mysterious running waters, and as the train flashes round the curves, plunging on its way through the gloomy labyrinths of the forest, the mighty voice of Nature speaks in more inspiring language to the traveller.

On leaving Londiani, where the road to the Ravine starts, the descent of the Escarpment begins, still passing through gorgeous scenery and forest, through Lumbwa to Fort Ternan (5,000 ft.), which, I think, along the line of the railway, is the end of the white man's country.

Fourteen miles farther on, with a drop of some 800 ft., is Mohoroni, and now the Railway runs more or less on the level, through a hot and uninteresting plain, which continues down to the shore of Kavirondo Bay, with the Nandi hills some few miles to the North, and after passing two more stations, Kisumu, the terminus of the Railway, is reached, after a journey of 584 miles, lasting approximately 46 hours.

Near Mohoroni, cattle grazing may possibly be carried on, but beyond here, semi-tropical products will be the rule, and this plain is not the district for a settler's permanent home. Cotton, ground nuts, rice and such like should do, and a small Indian settlement which was started a few years ago at Kibos has, I believe, been fairly successful. And more Indians are now to be imported.

In German territory, on the South-east shore of the Victoria Nyanza, near Mwanza, I understand that Arabs and Indians have large plantations of rice, ground nuts, etc., and do a very considerable trade, and I see no reason why the same should not exist in this valley.

It is most unfortunate that political and financial considerations caused it to be deemed necessary to carry the railway through this valley, and make the port on the Victoria Nyanza at Kisumu. The original survey across the Guas Ingishu to Port Victoria would have opened up a country superior in every way to the Nyando valley, capable of supporting a considerable population and surpassing it in practical products. At Port Victoria a good harbour could have been made with some 18 ft. of water, while at Kisumu there is only 8 ft., and from the amount of refuse, etc., which is continually being washed into the bay and the harbour, it is not unlikely that in a few years dredging will have to be resorted to. Owing to the shallowness of the water at Kisumu, the boats plying on the lake have to be of very light draft, and are consequently unable to carry as much cargo as they should do.

I now propose to briefly describe the country North of the Railway and the Nandi country, known as Guas Ingishu, on which the Zionists at one time cast such covetous glances. Leaving the line at Londiani, a march of about 20 miles along a very moderate cart road, through undulating and well-wooded country which is really part of the Mau Forest, brings one to Eldama Ravine, or as the natives call it, Shimone, which means a waterfall. This I think is one of, if not the most picturesque stations in the Protectorate, situated on the top of a hill at an

elevation of some 7,000 ft. It commands a magnificent view over the plains to Lake Baringo, and a little to the West, of the Kamasia hills. Beyond this range is the valley known as the Kerio valley, inhabited by Kamasia, Elgeyo, Mutei and Margweti tribes, the latter being not too favourably disposed to the Administration.

Reports of the discovery of diamonds in this valley, and also in the plains between the Railway and Baringo, have been circulated from time to time, and have, I believe, caused the land to change hands at comparatively high prices, but so far nothing has come of it.

Leaving Ravine station, the native track on to the Guas Ingishu leads westwards through a portion of the Mau, or perhaps more correctly the Elgeyo Forest, and the first night the camp is pitched in a small clearing, the track not leaving the forest for another couple of hours march the following day.

Juniper, a species of Cedar, and Podocarpus, are the chief trees of the forest, where I believe a timber concession is held, but a great danger to be guarded against in timber concessions up country, which however, I do not think applies to timber on the coast, is that a very large proportion of the Cedar trees are hollow.

On the two occasions that I have been through this part of the country, my first objective has been a hill called Sirgoit; on the first occasion it took me six days, and on the second occasion seven days to reach it from Ravine, and I noticed each time that the grass got much finer and shorter on about the fourth or perhaps fifth day's march, while the pick of the whole country and the favourite feeding ground of the game has been that piece of the country which surrounds Sirgoit for a distance of practically 10 or 12 miles in each direction.

This large tract of country, which on two sides, the South and East, is bounded by dense forests, the Nandi forests on the South and the Elgeyo forest on the East, is not suitable for small holdings: it is essentially a country for large ranches, as the homestead would have to be built on the fringe or the forest

and the stock runs extended out into the open plain. When transport facilities have improved I have no doubt that cultivation will be carried on as well as grazing, but this also will have to be done on a large scale. If the country is given up to small holders, they will never be able to make a living at anything, and the whole of the centre of the plateau will be unused.

Near Sirgoit is a small lake of the same name, known only to a few who have visited it, and even forgotten or unknown to many of the remains of the Guas Ingishu Masai, who used to inhabit this plateau.

On the plateau are to be found some curious remains of old stone kraals, or cattle pits, relics of a bygone race. These kraals, or at any rate all I have seen, are circular or oblong, but I could not see any traces of a roof, and they are built out in the open plain far from any timber or even bushes.

A short distance North of Sirgoit, the bush country begins and continues with different species of bush up to the edge of the plateau, looking over Turkwell valley. For some two days' march or more, the country is still good for grazing, but afterwards the grass is rank and rivers and swamps are the great obstacles to progress. This bush is the home of the five-horned Giraffe, which caused so much discussion when brought home by Sir Harry Johnston. These beautiful animals are comparatively plentiful in this particular district, and as the country is uninhabited except for a few Wandarobo hunters, the animal is not killed for its hide as in other parts.

From the northern edge of the platea a marvellous view is obtained of the whole surrounding country. To the East and North-East are the wild rugged Suk hills. North is the Turkwell River, which winds through the Karamojo district towards Lake Rudolph. Mount Debasien rises majestically to a height of over 9,000 ft. sheer out of the level plain, and seems to dwarf even Mt. Elgon, whose enormous size and the fact that it rises on one side from a high plateau, detracts from its height of 14,200 ft.

West of Debasien stretches another vast plain as far as the

eye can see; one might imagine that there was nothing until the Nile.

The Turkwell River is the boundary between East Africa and Uganda, and I will now retrace my steps along the slopes of Mt. Elgon back to Kavirondo. Before reaching Kavirondo, the country called Engabumi, or the Cave Dwellers, is passed. Some of these caves are very large. The first I found was a long narrow chamber, measuring some 210 feet to the extreme end, the doorway being carefully closed up with branches and logs.

The two largest I found situated in a picturesque horseshoe-shaped kloof, with a waterfall in the centre. The first one was practically divided into two by fallen boulders, and the two compartments were connected by a kind of passage at the back, and a long narrow tunnel connected this passage again with a smaller cave, the distance from one extremity to the other being 400 ft., and the greatest height 20 ft.

The largest cave in the group in this part of Elgon was shaped like the figure 8, divided into two by a stockade across the middle, the outer portion being used as a granary, the inner as a dwelling. This was the most perfect cave I saw; its measurements being nearly 309 ft. from front to back, about 150 ft. across and about 30 ft. high, but the size of the cavern possibly made the roof appear lower than it really was.

I only found one cave into which it was unpleasant to enter.

The origin of these caves has given rise to some speculation, but I do not think that they are anything more than the results of volcanic disturbances; they are much too extensive to have been the work of rude savages using inferior tools, and although I had been asked to examine them for any marks which might have been made by instruments, all the marks I found were explained by a Gabumi, or cave dweller, who told me that they chipped off pieces of the walls with the butt end of their spears to provide a form of salt for their cattle.

Almost directly after leaving the caves, the northern end of the Kavirondo country is reached. This is for the most part

treeless and without interest, very thickly populated, and the cultivation of matama, bananas and sweet potatoes is carried on to a very large extent. The Kavirondo own considerable numbers of cattle and sheep.

Most of their villages in the North are surrounded by earthen walls and a ditch, and in some places by hedges of cacti and euphorbia.

The Kavirondo are remarkable for the fact that their younger women wear absolutely no clothing, but while dispensing with clothing they do not despise personal adornment, and beads, iron wire, etc., are freely worn. A peculiar ornament is a grass tail tied round the waist generally by a string of beads. I believe that this is an emblem of marriage, and to touch one of these tails is a great breach of good manners, the offender being, I believe, liable to a fine of 5 goats. The men do not despise clothing, their chief pride seemingly being their head dress, generally made of basket work surmounted by numbers of beads, shells, and ostrich feathers. Smoking is a universal habit among men and women. They are very fair labourers for agricultural purposes, working for a low wage, and unlike many tribes, being willing to leave their own country for a year or more.

One object which is sure to attract the attention of the traveller through Kavirondo, is the quail decoy, consisting of a pole fastened either vertically in the ground, or horizontally on two sticks from which are suspended numbers of conical-shaped wicker cages, each containing a quail, whose call attracts others who in turn are caught by snares set round the poles.

South and South-west of the Mau Escarpment lies the Sotik and Lumba, both pre-eminently suitable for stock, and by far the finest cattle in the Protectorate come from the Sotik. The country of the South-west slopes of Mau, before the Sotik country proper is reached, is more unlike Africa than anything I have ever seen or heard of. It is a wooded country, at an elevation of somewhere between 7,000 and 8,000 ft., with large open clearings some thousands of acres in extent, and with belts

of trees, generally on each side of clear streams. This country is very well watered, and is, I think, the finest grazing land for cattle in the country.

One large clearing, practically in the forest, is worth a short description. To the extent of some thousand or two acres, surrounded on all sides by forests largely consisting of Cedar and Bamboo, the ground is practically covered with red and white everlasting, and in the early morning, when the ground is white with, apparently lime, it is as pretty a sight as one could wish for and one which I, at any rate, never expected to see in Africa.

Grasses in this part of the country seem to be very different to those usually found, and resemble very closely those which one is accustomed to find in the grazing lands of Scotland. In this part of the country, even in the middle of the day, one does not look for a shady tree, but rather is inclined to sit in the sun for comfort.

My sketch of East Africa, however incomplete, will be still more so without a few words on the Kikuyu country, between Nairobi and Fort Hall, and of this part I can only speak from hearsay.

Land has been taken up in this direction to a very large extent, but apparently comparatively little has been done towards its development, and a railway between Nairobi and Fort Hall is very badly wanted. Labour in Kikuyu is cheap, plentiful but indifferent in quality, the price paid being from six to eight shillings a month including food.

It would appear to be the country where the comparatively small farmer will do better than in other parts, owing chiefly to the number of streams, and I should imagine that the soil is more fitted for cultivation than for grazing. Coffee seems to do well here, and many people are trying fibres, chiefly Ramie and Wild Banana.

At and beyond Fort Hall, except on the hills of Kenia, the country falls away to lower levels, and here cotton is being

grown, and will no doubt be produced in large quantities if railway facilities are forthcoming, and rates are sufficiently low.

Northwards of Kenia, between Rudolph and the Abyssinian border, little is known of the country; the natives there possess considerable numbers of sheep and cattle.

A word or two in conclusion on the country as a whole. It has, I think, a future, but is not by any means a country for a man to go to without capital, and the chief reason for this is not the country itself, but the system which obtains there. If a man could go straight on to his land on his arrival in the country, it would be a very different state of affairs, but owing to the country being practically unsurveyed, a man has to wait months before he gets his land, and as often as not, after he has spent some six months looking for land, living in hotels or even camps, he has not sufficient capital left to develop his land when he gets it.

The country has many possibilities: it has no specialised industry and probably the best thing for a man to do who wishes to make money, and not only to provide himself with a permanent home in the country, is to take up land in the Highlands, where he and his family can live as they would in Europe, and also to take up some land in the coast belt, where he can grow rubber and other valuable crops, which should bring him a handsome return. In this way he will be able to live in a healthy climate, and pay periodical visits of inspection to what will probably be his most valuable asset.

There are many industries which could be carried on in the Highlands, one of the most promising and at the present time most profitable being Dairy farming, but settlers own comparatively few cattle and the price of cows and their small yield of milk, together with other risks, make it impossible at the present time for butter to be produced cheaply enough to compete with Australia and New Zealand. The breeding up of herds is always a slow process, and really the only chance that the majority of colonists have of stocking their farms is when the Government has had trouble with some tribe, and sells the cattle they confiscate. Pigs have been found to do remarkably

well, and the bacon industry would naturally go hand in hand with dairy farming.

I do not think that the country will ever compete in cereals with Canada and America, etc., although there will always be a considerable local market; the export trade of the country as far as crops go will have to consist of more valuable products, and probably oil seeds, coffee, black wattles, tobacco, fibres, cotton, bacon, butter, rubber and copra will be most extensively grown. It is only to the last of these, however, that capital will be attracted in the first instance, to any extent.

It is a thousand pities that the land is in such a state of chaos, and I believe I am only quoting the words of Sir Charles Eliot, spoken at a lecture which was given either at the end of last year or the beginning of this, when he said that among the more senior officers of the Administration, there was no one conversant with land settlement of other colonies.

If the Government wish to have the beautiful Highlands inhabited by a prosperous white population, it is absolutely essential that there should be an official to deal with the situation who has had experience of white colonists, and it is satisfactory to note that in the recent appointment of a Land Officer, the Government appear to be making an effort in this direction.

To facilitate administration, it would probably be much better to amalgamate East Africa and Uganda; many expenses would thus be saved.

At present the country is crying out for capital for the development of the coast, railways, and a hundred and one things inseparable from all industries, without which practically no industry in the world can be carried on.

I am firmly of the opinion that there is capital waiting to go into the country, if it can only find or force its way in, and I do not understand why it is made so difficult for capitalists to invest.

The export trade, according to latest advices, has increased by over 1½ million rupees in a year, a total of nearly 5,000,000, or £300,000 roughly.

WITH PEN AND CAMERA IN NIGERIA.

By R. ERNEST HOPE (late of Lokoja).

(Addressed to the Society in the Geographical Hall, on Tuesday,

April 16th, 1907.)

To endeavour to compress into an evening's lecture a history of Nigeria, and to give an insight into that country, with its multifarious customs and numerous races, means that much of interest must necessarily be omitted. I shall not, in the time at my disposal, be able to dwell long or go deeply into the many interesting episodes connected with the exploration of that vast protectorate. The story of Nigeria and its races commences about 850 B.C., when the Phœnecians from Tyre founded the city of Carthage. In 149 B.C., during the Roman conquest, this city was destroyed after a fearful siege. Some of these Carthaginians would then probably go southwards into the Soudan. Pliny, who was born at Verona in A.D. 23 tells us that after the siege of Carthage, the Romans journeyed through Tripoli to Lake Chad and the Niger. He calls the river the "Nigir." The present names "Niger" and "Nigeria" are merely European colloquialisms. Following the Carthaginians and Romans came the Arabs, four thousand invading Egypt in 646. Mahommed had only been dead eight years, when these Arabs, imbued with religious enthusiasm, made their invasion. Thirty years previously, idolatry and immorality were rampant amongst the Arabs: Mahommed was unknown. What a change! Then their mission would have been different. Now they inculcated a new spiritual life. As Maxse says: "They introduced everywhere progressive methods of agriculture, commerce, trade and industry. These Arabs were no mere land-grabbers and plunderers: they set systematically to work to regenerate the country and henceforth identified their interests with it. They introduced the camel into Africa, instituted regular cara-

van routes across the continent and protected them," and to this day these caravan routes exist and are in daily use. Many a time have I watched the caravans come into Lokoja along this ancient road. So great had the caravan trade become that Sir Frederick Lugard thought it a good means of increasing the revenue of Northern Nigeria. He therefore instituted the caravan tax. The tax was charged on the assessed value of the caravan—the assessors being the government's Sierra Leone clerks, who took advantage of their position and subjected the tax to great abuse. After Sir Frederick Lugard's resignation last year the tax was repealed. In the ninth century, the Arabs crossed from Tripoli to the western bend of the Niger, and in the tenth century were producing maps of the south of the Sahara. To these Arab travellers we owe our first information about the Niger. The glowing accounts which they brought back of a great inland sea and of the fabulous wealth of Timbuctoo, so whetted the exploring appetites of the Portuguese, that a chartered company was formed to investigate this wonderful sea. The inland sea was said to flow due west from what is now known as Lake Chad and to enter the Atlantic at Senegal. In 1444 the Portuguese ships reached the mouth of the Senegal and sailed up for fifty miles. They returned from this first venture with a cargo of slaves. This was the commencement of the slave trade which lasted for four centuries. In the seventeenth century a British company was formed to explore the Gambia. The first man sent out—Richard Thompson—was murdered by the Portuguese: this was in 1618. Richard Jobson succeeded him and managed to explore 300 miles of the Gambia, and got home safely. His information about the golden city of Timbuctoo, he told to the Merchant Adventurers' Company. Many lives were lost by the company in endeavouring to explore that part of Africa. So little headway was being made that the company abandoned its explorations. For over a hundred years British enterprise ceased. The French took up the matter, and were instrumental in proving that the Gambia and Senegal were independent of the Niger.

This was confirmed in 1723 by Captain Stibbs, who was exploring on behalf of a British Company. At home the interest in the Niger was increasing yearly. Geographers were keen to know the course of the river—whence did it come? whither did it go? With a view to solving the problem—a problem which had perplexed students for centuries—The African Association was formed in 1778 by a number of prominent men interested in African exploration. Sir Joseph Banks was the head of the Association. In 1780 Horniman was sent out. He started from Tripoli but only reached the Nupé country when he succumbed to the climate. Houghton followed, reaching the Upper Niger from Gambia. He was murdered by Moors and Arabs. Sir Joseph Banks' choice now fell on Mungo Park, a young Scotsman born at Selkirk, who was apprenticed to Dr. Anderson, of that town. Mungo Park left England in 1795, being then 25 years of age. Entering by the Gambia, he was not long before he got his first baptism of fever. During his illness he set to work to master the Mandingo language, and study the customs and beliefs of the natives. He received great assistance in his studies from his two faithful servants—Johnson and Demba—provided for him by Dr. Laidley, of Pisania.

Though in a tropical country, Park did not abandon his eighteenth century dress. His close-fitting trousers and coat were considered vulgar by the Moors, who said that the human form should be revealed as little as possible.

Once Park was robbed of all his clothes and left to die. One of the Moors, taking compassion on him, threw him back his coat, trousers and hat. The hat was more valuable to Park than the Moors imagined, for inside the lining thereof were his precious notes. On another occasion he was given some raw eggs to eat to prove that he was a Christian, as all Christians were supposed to be able to eat raw eggs. Much as he liked eggs, he could not eat them raw. This gained him the respect of the Mallam. Park was allowed to go on his way rejoicing. The natives do not eat eggs, as they consider it very wasteful when chickens can be produced from them. Not being judges

of eggs they do not mind in what condition the eggs are when they sell them to the Europeans. It is all the same to them whether the eggs are a day, a week, or a month old.

Continuing his journey, Park expected soon to reach Timbuctoo. He got within a hundred miles of the place when the King of Silla stopped him. He wanted to know what present Park had brought him. The few presents he had brought into the country had long ago disappeared, whilst even half the buttons from his coat had been distributed. He had therefore not much left to offer. You can imagine Park not caring to offer brass buttons to the King! He was prepared to leave the King his coat as a gift for permission to proceed, but the King was obdurate.

Being thoroughly worn out and alone—his servants having all deserted him, whilst even his faithful steed had been left behind at a village in a dying condition—he decided to return to England. Passing through the village on his return, he was delighted to learn that his horse was quite well again. The animal readily recognized him, and showed its recognition by neighing for some time—a thing it had not done since its recovery. The horse was a great solace to Park on his way to the coast in this time of despair. He reached England on the 22nd December, 1797, after an absence of two years and nine months. He retired to Selkirk, having married the daughter of Dr. Anderson, his former employer, but settle down for long he could not. Africa was calling him. In January 1806, he again started out: this time at the head of an expedition fitted out by the British government. Seven months after, only seven out of the forty Europeans composing the expedition, had survived the trying ordeal. The seven pushed on, navigating more than a thousand miles of the Niger in a boat built by Park. At the Bussa rapids, misfortune overtook the few remaining ones: their boat ran on the rocks. The natives, not knowing what they were wanting, and no doubt afraid at seeing a white man, shot at them with arrows. Seeing the hopelessness of the situation, Park and his companions jumped into the river and were

drowned. A sorrowful ending to so daring a spirit. Of the native crew, only one boatman survived.

So far it had only been settled that this great river took a south-westerly bend after leaving Timbuctoo. Where it entered the sea was still a mystery. Park had supported the belief that it joined the Congo. To reach the Niger from the west coast seemed impossible. Expedition after expedition met with disaster. The Government next sent an expedition up the Congo to attempt to discover something about the Niger from there. The expedition turned out a complete failure. The next attempt was from Tripoli in 1821—fifteen years after Park's death—by Clapperton, Lander, Barth, Denham and others. They utilised the trade routes as much as possible in crossing the desert. This expedition was a great success. In February they beheld the gleaming waters of Lake Chad.

On reaching Sokoto, the Sultan refused to allow them to proceed further, so they returned to England, reaching home in 1825.

Clapperton and Lander were not long before they were again organising an expedition. Next time they entered the Gulf of Benin, passed through the Yoruba country, and joined the Niger at Bussa. Proceeding north they again reached Sokoto. Here Clapperton died. Lander, much broken in spirit through the death of his faithful companion, returned to England.

In 1830, Richard Lander, joined by his brother John, again started out. They landed at Badagry and passed through the Yoruba country to Bussa, as Clapperton had done before. Thence they descended the Niger and came out at Brass. Thus in 1830, twenty-four years after the death of Park, were his explorations completed, and the great problem of the Niger outflow solved. The three thousand miles from source to mouth had at last been traversed.

From 1832 to 1861, Macgregor Laird was the moving spirit in opening up the trade of the Niger. He was assisted in a luke-warm fashion by the British Government. In 1856, Dr. Baikie was appointed his Britannic Majesty's consul at Lokoja.

He was an excellent man for the post, encouraging trade. Unfortunately his health failed; he was obliged to leave the country in 1864. In 1868, after six representatives had been at Lokoja in succession, the British Government decided to abandon the post. The French and German now stepped in, and as Sir Harry Johnson says: "Their intention nearly ended in the Niger becoming a French river with a German estuary."

Our retention of the Niger was simply due to British traders sticking to their posts. In 1877, Sir George Goldie came upon the scene, and to him alone do we owe the possession of Nigeria at the present day. His sojourn there is a long story full of interesting experiences and thrilling incidents. It is hoped that some day he will be persuaded to commit his experiences to paper. The book would be of absorbing interest to many. No one could tell the inner history of the country as he could. Many an interesting chat have I had with an old black man named "Shuffi" at Burutu on his experiences during the early days of the Niger Company. Goldie commenced by amalgamating the trading companies into one company, calling it the National African Company. At the Berlin conference of 1885, a charter, acknowledging the British sphere of influence, was granted to this Company. The charter left the great Hausa state open to all powers to come and take their slice. This did not suit Goldie. He immediately set about making treaties with all the chiefs of Hausa land.

Patriotism, as understood in England, does not exist amongst the African races. So long as their customs and mode of government are respected they are satisfied. Goldie willingly gave that undertaking in making the treaties with the chiefs. In 1886 the name of the National African Company was changed to that of the Royal Niger Company. In 1888, after the lapse of twenty years, the British Government were again represented at Lokoja.

The treaties were, on the whole well kept. The only real trouble being with the Emir of Nupé. He wanted the Emir of Illorin and the King of Bussa to join with him in driving the

English out. The King of Bussa, with true loyalty, informed Sir George Goldie of the Emir of Nupé's intention.

A secret expedition was got together at Lokoja. Thirty British officers in charge of 513 Hausa and Yoruba soldiers started from Lokoja on the 6th January, 1897, with Beda, the capital of Nupé, a town of from seventy to one hundred thousand inhabitants, as their objective. News had come to Lokoja that the enemy were marching on to Kabba to attack Lokoja. Right at the commencement, the mere handful of men had to divide—half going over land through Kabba and half up the river. Luckily the enemy had taken fright and were on their way back to Beda, when the troops reached Kabba. The forces joined the main body at Egbohn without having encountered the enemy. The united forces now marched on to Beda. The crucial moment had arrived of putting the Hausa soldiers to the test. Would they remain loyal?

After thirty-six hours stiff fighting, Sir George Goldie was master of the situation. Fulani rule was at an end. Five hundred and thirteen untried Hausa soldiers, with thirty British officers pitched against seventy thousand men. What a victory! The total losses on the British side were one officer and seven men killed, nine men wounded.

It is most singular that the natives have never made any use of the river power. It is looked upon by them as a hindrance rather than a convenience.

With a small and successful expedition against Illorin, Goldie began to see his way clear to that peaceful united Nigeria which he had made his goal.

In less than twenty years over five hundred treaties had been made with African chiefs, so that in 1898 the soldier statesman, Sir George Taubman Goldie, had the unparalleled and proud distinction of being able to hand over to the British Government about 370,000 square miles of territory, containing at an estimate 25,000,000 people.

Such then is a very brief history of the country from which I returned three months ago.

As you had the pleasure, two years ago, of hearing a lecture on Calabar, I do not propose more than briefly to touch upon that part of Nigeria in this lecture. The passage out had been a very rough one. We arrived in the Calabar river, three days late, on the 25th December. We had the misfortune to ground on a sand bank, and as we had missed the tide it was a case of waiting for the next tide to float us. Having thus spent my first Christmas day in Africa on a sand bank, I landed at Calabar the next morning. The town was looking at its best, being decorated with flags and festoons for the annual regatta and sports which were to be held that day. The regatta and sports are arranged by the trading companies established in the Oil Rivers. The natives enter into the different events with great enthusiasm. When a favourite gang wins a gig race or a tug of war the cheering is simply deafening. An English football crowd is bad enough, but in an African crowd every man, almost, of a favourite side, shouts himself hoarse. Leaving the sports ground, which was at the German Company's factory on the opposite bank of the river from Calabar, we crossed in a gig to Duketown; the native town of Calabar. After my friends had perused their mail, a stroll through the town was proposed. I found that the majority of the streets had been named as in an English town; the names, I learnt, were in the Efic language. The streets were kept in very good condition, whilst gulleys were being constructed down the side of many of them. Open gulleys are necessary to carry away the heavy downfalls of rain. The houses or huts are built in groups, about half a dozen being erected around a large open court. The court is used by the inhabitants of the huts as a place to dine in. They will also meet there in the evenings to play their games such as draughts and a kind of chess. The population of Duketown is divided into households, each household being ruled by a chief. Over all a native king and queen rule. Members of the different households cannot leave one and join another household. They are the servants of the chief of that household. A child born into a household remains

a member of it. All the Calabar people are to this extent slaves, but it is a form of slavery to which very few can have any objection. The different members of a household are really co-partners in the estate. At the death of a chief all the property is left to the household. A new chief is appointed to look after the estate and household. When a man or woman becomes unfit for work, I am told that he or she is allowed to remain in the household, sitting down at the festive board with the rest for his or her meals. There are no workhouses in the Calabar district, nor do I recollect seeing any man or woman begging.

A few years ago a very powerful society was in existence amongst the Calabar or Efic people, called the Egbo society. (The majority of the Efic people were members.) The principals of the society lived in the bush. At different times of the year they would hold plays in the native town. At the appointed time the Egbo men came out from the bush dressed in the most grotesque manner imaginable, their faces covered with some hideous mask. The rest of their bodies, including hands and feet, was enshrouded in a sack-like dress. Their identity was never known. Dancing and fencing would go on for hours. At the close of the day they would return to the bush enriched by a handsome collection. The evening would be given up to drinking. The drink consumed would be chiefly native beer made from the sap of the palm tree. The sap is extracted from the tree in a very ingenious manner. A fire is lighted at the top of a tree. The fire draws up the sap which is then conducted into a calabash fastened to the tree. This palm wine is delightful to drink when fresh, but when allowed to stand for two or three days it becomes an intoxicating drink. In this stale condition the natives prefer it.

So powerful did the Egbo society become that it was a menace rather than an assistance to good government. The chiefs of the society had it within their power to ruin any man who fell foul of the order of Egbo. The chief would call a special assembly of Egbo. Runners would parade the street

and finish up by blowing Egbo at the front door of the party threatened. After the trumpet had been blown three times, no man or woman dare have any intercourse whatever with the person so treated for fear of being similarly dealt with.

The Government had eventually to break up the order. Their quaint plays and pastoral pictures are now no longer seen in Calabar. Leaving the town which is at the foot of the Government Hill, I was taken over the hill. On it are all the bungalows and offices. The Presbyterian mission also has its quarters there. Each bungalow stands in its own grounds. The grass and walks of all are kept in good condition by the prisoners, who go round doing the scavenging work. The variegated bush is a fitting background to the bungalows and gardens. Walks in the bush are delightful. Standing over two hundred feet above sea level the ground is dry and sandy, the bush is not a high one, whilst the paths are well defined. Before leaving Calabar I should just like to mention that the great pleasure of a bush walk is in being able to get something to drink whilst in the bush. Milk from the newly-pulled coconut is too good to describe, whilst the fresh palm wine is delightful. In addition there are oranges and bananas with which to refresh the traveller. Leaving Calabar I joined the homeward-bound steamer in the Calabar river. She threaded her way through some of the grandest scenery on the west coast, and in a few hours' time again reached the sea. Turning westwards, Forcados was reached in the course of two days' time. Having no cargo to leave at or take from Forcados, the boat does not cross the bar, but drops anchor outside and awaits the arrival of the branch boat to take the passengers in. The discharging of the human freight is not accomplished with the same ease in the turbulent sea as in the tranquil river. The branch boat having arrived, drops anchor at a distance sufficiently far to prevent any collision, should the boats swing towards each other. To come alongside is impossible. Surf boats are lowered. These boats are specially constructed, being very strongly built and flat bottomed, so as to be able to battle with

the surf of the African ports. The luggage having been lowered into the surf boat in slings, and conveyed to the branch boat, preparations are made for the departure of the passengers. A palm oil cask, the upper portion of which has been cut away, is fastened to the ropes of the crane. Instead of a palm oil cask some boats use a Madeira chair roped round to hold it together, whilst others build a kind of wooden swing with seating accommodation for two. The coast name for these articles of ship furniture is "Mammy chair." The black men leave the ship by means of the rope or rope ladder, and some Europeans prefer that means of egress to being tossed in the mammy chair. The passengers step inside and sit down on the boards fastened to the side of the barrel which serve as a seat. With instructions to the black winchman to "heave away softly," we are raised off the ship's deck and the next minute find ourselves dangling over the side. The passengers are told by the mate to hold tight to the rope, though that warning is rarely needed. With a "steady, steady," and a "let go," we are dumped into the surf boat below. Scrambling out of the cask has to be done as gracefully as a rocking boat will allow. The black boys in the boat render every assistance. In the excitement of the moment the fact that we are standing in water, or that the little luggage is floating about the boat is hardly noticed. Having waved our good-byes to the Captain, the crossing to the branch boat commences. This may take a quarter or three-quarters of an hour, according to the roughness of the sea. At the branch boat, operations are reversed. The passengers are now hoisted up from the surf boat to the deck of the branch boat. They are glad to get on board, and no doubt not surprised to find that their luggage is as wet as themselves. Troubles are not yet at an end. There is an hour's run before anchoring safely inside Forcados harbour. The branch boats are designed specially for bar service. They are of shallow draught, and of small tonnage. Forcados is not a large place. The native population is small and the trade of no moment. The few bungalows along the beach are connected with the customs and post office. Those in

the back ground are the residences of the European officials and the Government's European doctor. After the mails have been left at the post office and the ship's papers passed by the customs officials, the boat proceeds up the Forcados river to Burutu, passing on her way the "Sir Alfred" dry dock, a dock used for repairing boats connected with the steamship company. Arriving at Burutu I found it a little hive of industry. Engineers' shops, a slip-way for river boats, a bank, European bungalows, a hospital, cargo stores, wharves, and a shop are all seen in quick succession. Passing these, the Government wharf is reached. Here the boat goes alongside. The Government's river boat comes abreast of her to take off the passengers and mails for ports on the Niger river. It was here, amidst the clang of the engineers' hammers, the screech of the ship's syrens, and the rattle of the numerous winches that I passed many happy days. Burutu is the great port of the Niger; produce from up the river being brought down for shipment to Liverpool, or Hamburg, whilst goods are left there for conveyance by the river boats to the ports of the Niger.

There are one or two good bush walks in Burutu, but the great pleasure of the bush is in being able to watch the gambols of the monkeys. They have very acute hearing. At the least sound they are on the alert. If danger is espied by one of them, word seems to be passed round. A few deep grunts, a squeak or two, and not a monkey is to be seen. Beside the monkeys, the bush abounds in parrots. To the sportsman an afternoon's pleasure is assured. The parrot proves excellent fare. In taste, it is something like a pigeon.

I was not long in Burutu before the chief of the Jakrie tribe called on me. He is a sturdy old man. His village of about thirty people, including his five wives, is a little further up the river. On going up the river one day on a shooting expedition with other Europeans, we called on the chief. (See Figure I.) Amongst the native huts he had built a wooden house for the reception of European visitors, so he told us. It was crudely fitted up, whilst the walls were decorated with all the adver-

tising cards which he could gather from the shops in the locality. Refreshments were quickly brought out. One of his daughters acted the part of hostess exceedingly well. I had many a chat with this old African chief about the jujus. All the tribes have a great belief in juju spirits, and charms. There are good spirits and bad spirits, whilst in the bush there are men specially endowed by the juju spirit with supernatural powers.



Fig. 1. "Jakrie Chief and Family."

I learnt that the head or king of the spirits would send a good spirit to watch over the villages or a bad spirit to bring sickness and death according as the people were good or bad towards the jujus. A thief, living in a village, would result in a bad spirit being sent to the village to drive away the evil person. If sickness continued in the village a juju man would be called in from the bush to enquire into the matter. Some ceremony would be gone through, and a poor unfortunate person would

be picked as the one causing all the trouble. He or she would have to leave the village. At the entrance to the village there are roughly constructed tables. On the top of one I saw a broken gin bottle, together with some yams (native potato), whilst in front hung a piece of coloured cloth. In the village were tables of more elaborate construction, being often built with mud and surrounded with mud walls. Outside the door of the chief's house, calabashes and wooden vases were hung up, whilst in the entrance further strange objects were to be seen hanging. All were covered with dust, as though they had been there for some time untouched. I was on the point of examining one of them when I was stopped. I asked the chief what they were. He told me they were juju houses. "Juju houses?" said I. "Yes," he said. He went on to tell me that when the Juju spirit came to the village he must have a house wherein to sleep. He would be angry were no house provided for him, and on his return would send his bad spirit. Asking how the spirit could get into the wooden bottle, for instance, the chief showed me a slit in its side. "He goes in here," he said. I was getting curious. I asked what all the tables around the village were for. He told me that food was placed on the table for the juju spirits. The juju had to be fed like ordinary people. So far I understood, but I could not see how the spirit could have eaten the food when it could be seen day after day on the table, apparently untouched. The chief insisted that the spirit had taken what it wanted of the food. What was left was the shell, as it were. He illustrated it in a very telling way. "Take for instance," he said, "the death of one of your white men. You look at the man and say that he is dead, but he is there. He is just the same as when he is sleeping. There is a something gone out of him, though. It is just the same with the food given to the juju spirit." The soul of the food has been eaten and only the outside casing left. My logic failed me. On another occasion he actually told me that the white people had juju spirits. He said he had seen pictures of them. He had seen illustrations of mermaids.

Leaving Burutu and my Jakrie friend, I joined one of the river boats for Lokoja in Northern Nigeria. The ship was manned by black people, the only Europeans being the Captain and the Chief Engineer. Awakening next morning, I found myself in the land of palms, the mangrove trees having been left far behind. The lower Niger abounds in banana and oil palms. There is also a number of cocoanut trees. In the foreground I noticed numerous yam plantations, whilst here and there I observed the pine apple growing. The yam is the native potato. It is an excellent substitute for the potato. It takes various shapes. In the lower Niger it grows into shape something like the swedish turnip, whilst further up the river it takes the shape of a melon. Some are thicker and some much thinner than the average melon. They grow underground like the potato. The yam shrub takes more of the form of a tree rising to a height of over six feet. The bananas are not as good as the ones we are used to in England. They seem to ripen quickly and are far too sweet to be pleasant. The pine apple is very poor. It has little juice and is very fibrous.

The native has several ways of preparing the yam. One is to boil it like the potato, after peeling it. When nearly cooked, it is put into an iron pot with some palm oil, ground nuts, red pepper and a chicken. (African chickens are very small and have not much flesh on them). The whole is boiled for some time. This "Palm oil chop" is a favourite dish with the natives. Many Europeans are also very fond of it. Another method is to boil the yam until it is soft, then beat it in a wooden mortar to a pulp. The result is something like mashed potato. In this form I greatly enjoyed it. It is known as *foofoo*.

The lower part of Southern Nigeria is noted for its oil. The network of river is known as the oil rivers. The palm nuts are gathered in the bush by the natives; the husks are removed from the kernels and beaten in a trough in order to extract the oil. The liquid is then purified by boiling. The purified oil is placed in casks and sold to the European trader who ships it to

England or Hamburg. The kernels of the palm nuts are too hard for native treatment, so are put up in separate bags for shipment to Europe as "kernels."

Along the banks of the Niger, small villages are to be seen at frequent intervals. From out of them boys came in canoes calling allay! allay! allay! I learnt that they were asking for the empty tins. A few empty ones were thrown into the water for the boys to dive after. All the African tribes living on the water side are expert swimmers.

Leaving the Jakrie country behind, the Ejaw country is entered. (The different tribes speak of their particular district as their country). The Ejaws' huts are constructed chiefly with bamboo and wood with mud plastered on the inside in order to keep the rain out. The outside has the appearance of an English ceiling seen from above before the floor of the room has been put on. A few of the huts would be plastered on the outside as well. In Assay village (Ejaw) some of the women were busy making fishing nets, whilst others were engaged in preparing the evening meal. Many of the girls had heavy bands of ivory around their ankles and wrists. They seemed to serve the same purpose as the bracelets of our English girls. As it was the dry season the river was very low, many sand banks being visible. On a number of these, fishermen had pitched their grass huts. I could not help thinking of them as Arabs in the desert resting by the wayside. Pitched on the golden sand in the middle of the river, they looked most picturesque. At Onitsha, where the first station on the Niger connected with the British Cotton Growing Association is, a pilot was taken on board to navigate the ship to Lokoja. The white captain gives place to the black pilot. The pilot is a native of Lokoja and a Mahommedan. He has lived on the river all his life. He knows every nook and corner and is able to pick out the course quite easily without the aid of any chart or diagram. In fact a chart would be of no service in the Niger with its continually changing sand banks. By simply watching the ripple on the surface of the water a pilot is able to steer a good course.

Except on a very bright moonlight night, the anchor is dropped at dusk. Even on a moonlight night there is a great risk of striking one of the innumerable "snags." I soon found out that the natives were possessed of wonderful seeing powers. As I was on the look out for alligators, the pilot seeing my sporting intentions, pointed out some to me, which he said were basking in the sun on a sand bank ahead. I looked in the direction he was pointing, but could see nothing. I thought he was mistaken. He was so positive though, that I fired in that direction. An alligator, awakened from its slumbers, slipped into the water. There are large numbers of hippopotami and alligators in the lower Niger. The dry season is the best time for sport as the innumerable sand banks are their favourite basking grounds during the heat of the day. The Sobo and Jakrie tribes will not eat alligator flesh, but the Hausas look upon it as an excellent food.

The country became more hilly as we proceeded until, as we approached Lokoja, hills seemed to be everywhere. It was a most welcome change after the mangroves of Burutu and district. Whilst the rocks are pleasant to look upon, they are far from pleasant when half hidden under the water. The boat had only the misfortune to ground once. That was just as night was coming on. She was floated in about half an hour and the anchor was dropped for the night. Next day I reached Lokoja, having been five days in travelling three hundred miles. (See Figure 2.) The hospital was the first building to come into view, having a commanding position on the top of a small hill, overlooking the river. The boat was quickly alongside the beach, and before many minutes the cargo was being discharged. I had been fortunate in having a good boy with me as servant, for he had provided me with an excellent variety of food on the way. (On the river boats each man has to provide his own food and bed. All that is provided is a room wherein to sleep.) My luggage gave me no trouble. The boy saw to everything being taken up to my new quarters. I merely had to speak to the white man on the beach for some labourers to carry the boxes.

Lokoja is the natural capital of Northern Nigeria, being situated at the junction of the two important rivers of Nigeria — the Niger and the Benue. Mount Patti stands well as a background to the town. The bungalows are surrounded by tastefully laid-out grounds. The Hausas are the predominating race. Their origin is unknown. Some writers incline to the belief that they came originally from the East of Mecca and settled down to the north of Kano; others that they are in-



Fig. 2. "Lokoja—The Beach."

digenuous to the Sahara. Mary Kingsley says: "The Sahara may have oases, valleys, enclosed plains where man can live, as it were, on islands in the sand seas." Whether they came from Mecca to Kano, or are indigenous to the Sahara, they were undoubtedly driven southwards during the invasion of the Phœnicians and Romans. The looms and dye-pits of the Hausas are well known. (See Figure 3). They have proved good soldiers but naturally they are traders. As commercials they would be

excellent. They would walk for days selling their wares. Before two or three minutes have elapsed, the pedlar has spread his goods in front of the prospective customer. He invariably asks three or four times the market price for his goods and so has an ample margin for making reductions. They are a cheerful, happy-go-lucky lot, good tempered, and brimful of

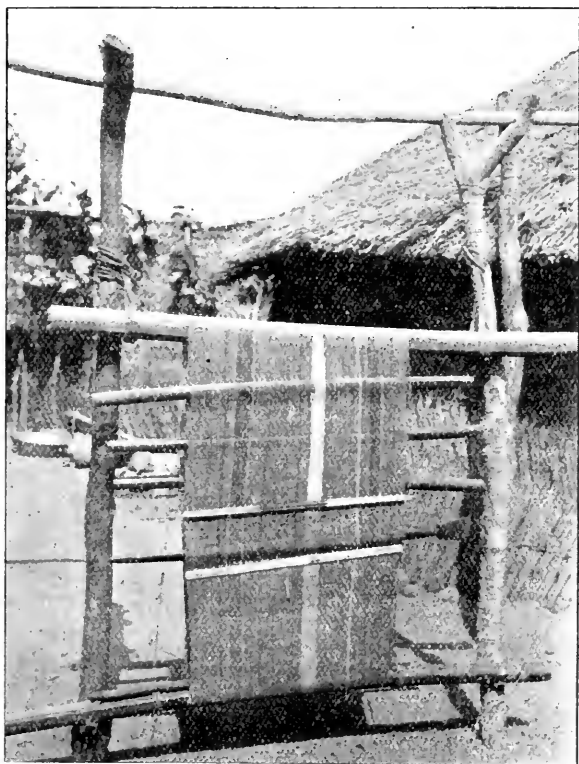


Fig. 3. Hausa Loom."

fun. They seem quite indifferent to danger, and never meet troubles half-way. They are excellent horsemen, riding their Arab steeds bareback in the most reckless fashion. The strength of some of them is wonderful. The carrying of a field gun for some distance is a common thing in the Government expeditions.

By carrying everything above the waist line, either on the head or on the upraised hand, they attain a remarkably erect carriage. The Hausas paint around their eyes with antimony, saying that it improves their seeing power. They are much heavier built than are the Jakries, whilst the women have certainly much more flesh than have Jakrie women. This superabundance of flesh is a sign of beauty amongst the Hausa women. They look upon the Jakrie women as having no beauty. As a Hausa said to me: "Dem Jakrie mammy no good, no catch plenty fat." The Hausas are excellent wrestlers as I one day found out. They wrestle in the catch-as-catch-can style. My only recollection of the wrestle was a heavy fall and then being told that I had lost. When a man has been thrown he has been defeated. There is no further trouble of putting the shoulders square on the ground. Try as I would, I could not throw my opponent.

The Hausas have several musical instruments. One is like the guitar; another takes the form of the Scotch bagpipes; another is a reed instrument, known as a piano, whilst a third is a kind of bow from which a splendid scale of notes is obtained. They have also a full range of drums known as tomtoms: from the war-drum down to the small drum which is used at all festivities. The wonderful code of signals which they have in connection with the war-drum has been exemplified on more than one occasion. The most remarkable use of the drum was in connection with the Benin massacres of 1898. On that occasion, the massacres were known in Lagos several hours before the official news came over the wires; it had been transmitted by means of the tomtom. When I was at Burutu, news was continually arriving of the progress of events in the Benin districts, where a small rising had taken place, to be confirmed later by wire. The disturbances in Northern Nigeria were intimated in a similar manner to the natives. At the sound of the war drum, every native is on the alert. As the message is read it is transmitted to the next village and so on from place to place. The natives have wonderful hearing. I have seen natives approaching, commence to talk and continue talking for

a long time after they had passed each other. They do not trouble to turn round or stop but talk as they walk. On one occasion the distance separating two natives on a straight road must have been considerably over a quarter of a mile. It must be remembered that the atmosphere in Nigeria is very clear and so aids the transmission of sound. It was quite a common thing to be able to see hills distinctly from twenty to thirty miles away. Natives rarely walk abreast of each other. Two natives might be engrossed in the most interesting conversation



Fig. 4. "Lokoja—Road showing narrow winding track."

but they would most probably walk one behind the other. As a consequence of this, narrow winding tracks are to be seen on all the roads. (See Figure 4.) On no occasion have I seen the tracks straight for more than two or three yards. The natives have not the slightest idea of parallel lines. It used to be amusing to ask a boy to put a picture straight on the wall of the house. (All servants are known as boys whatever their age. In Northern Nigeria, old men are known as Babas, which is a

Hausa word signifying old.) Try as the boy would, he could not manage it. It becomes a case of "a little more, more, stop."

Before the Beda expedition, the Hausas were under the rule of the Fulani, who in Northern Nigeria are probably as numerous as the Hausas. For over three hundred years after the advent of Mahommed the Fulani remained a pagan race. In 1802, between the first and second of Park's explorations, they threw over paganism and embraced Mahommedanism. This change had far-reaching consequences, founding as it did, an Islam Empire from Chad to Senegal. The Fulani are said to have originated in Asia, having invaded Egypt somewhere about two thousand B.C. The Egyptians struggled hard to repulse them but without success. With their hump-backed cattle and their Roman-nosed sheep, they settled in different centres of Africa. To this day their cattle and sheep flourish in Nigeria. By abstaining from intermarriage with the other African races, the Fulani have maintained the purity of their race. The features remain of an Eastern type, being clear cut and well developed, the nose especially being straight and sharp, in striking contrast to the broad flat noses of the rest of the African races. They are a tall race of people, of excellent carriage with perhaps a tendency to haughtiness. They are very clean and invariably well dressed. They consider themselves far superior to the Hausa race. The language seems to be distinct from that spoken by the Hausas.

Lokoja was all excitement when we arrived, owing to the recent risings in the Bauchi country. Some European officers, on their way home on leave, had been recalled at Lagos and sent up the Niger on a special boat. Preparations were now being made for an expedition against the Munchi people. News had been brought down of the massacre of Hausa and Sierra Leone traders. A trading company's store at Abinsi had been looted and burnt. After the lapse of a week, six hundred canoes had been got together with the necessary carriers. A handful of soldiers started on their five days' journey up the Benue to the scene of the outrage. Just as the forces reached the spot, news

came from home that the expedition had not to be proceeded with: further particulars being first required. In the meantime the Munchis had carried everything of value to them into the bush, but our soldiers could not follow them. During the wait, a more severe rising took place in the Sokoto province. Most alarming rumours came to hand in connection with the town of Sokoto. The High Commissioner wired home for some additional guns, and also asked for re-enforcements from Southern Nigeria. Columns were drafted from Abinsi across the country to Sokoto. It was said that a new Mahdi had come from the Sahara and was leading the men under their green religious flag. The expulsion of all the Europeans was said to be their intention. Luckily the Mahdi was killed in the first encounter. This disheartened the Mahommedans. The town of Sokoto was relieved with little loss. Major Burdon, the British resident, was much shattered in health, and had to leave for home shortly afterwards. I had the pleasure of discussing the affair with him in Lokoja when he was passing through on his way home. He did not look upon the matter seriously. It was more the work of fanatics than that of sane men. On the whole they were contented with the method of Government, and had only been led away by the new Mahdi. With the quelling of a small rising at Kano, where the Emir had been causing trouble for some time, the country again settled down. The Emir was taken prisoner, sent down to Burutu, and after remaining there a few months was brought to Lokoja, where he is now living in exile.

Walking through the town of Lokoja on the evening preceding the great Rammadan feast, I was puzzled to understand why a large number of people were looking in a certain direction. I could see nothing to necessitate this gazing. Asking one of them the reason, I was told that they were looking for the moon. At the appearance of the new moon, the month's fast ends and feasting begins. The day was a particularly cloudy one, rendering a sight of the moon impossible until the sun had been set for some little time. The Mallam

at the mosque assured the populace that the moon had been seen and that feasting and merriment could commence. Early next day the feast of Rammadan was held. The Mahommedans first assembled in a natural amphitheatre at Kakunda, a little outside Lokoja. Prayers of thanksgiving were offered up to Allah. At the close of the service they returned for a final service in the mosque at Lokoja. The rest of the day was given over to eating, drinking, and merriment. Passing one of the native compounds my attention was attracted by loud cheering coming from the inside. In the compound, a cow was held captive by means of two ropes—one fastened around a hind leg and one around the neck. Some game seemed to be in progress. I had my camera with me and was about to take a photograph of the cow, when some of the women, who were responsible for the play, stopped me. I could take a photograph but I must pay. This I readily promised to do, having had previous experience. Asking the price, I was told one pound. Being in a generous mood I offered to pay two pounds. Even with the consent of the women my troubles were not at an end, for just as I was taking the photograph, the cow objected. The sight of the camera and cloth evidently frightened it. The play seemed to be a kind of one-man show. A man with only a loin cloth on, who was said to come from the bush, and who had been specially prepared with some juju medicine for the occasion, would lay himself down under the nose of the infuriated cow. I expected to see the cow gore the man. It only sniffed at him and then raised its head. The crowd was speechless: so was I. When the man withdrew, they went frantic with delight. All were eager to shake hands with him. He next climbed around the cow's head, sitting between its horns and on its neck: no hurt befell him. I managed to get one or two photographs. Later in the week one of the fair ladies came to me for payment. She was well satisfied when I gave her some photographs of the cow and the crowd.

Every means possible is made in the different centres to make the life of the Europeans as pleasant as possible. In

Lokoja, the love for sport is well fostered. There is a large recreation ground, where tennis, cricket, football, badminton, croquet, and golf are played, whilst around the ground a racing track has been constructed for those who want further excitement. On a ground near to the officers' lines there is a polo field, where polo is played three times a week, whilst on other days punch ball has full sway. At frequent intervals, gymkhanas are arranged by the Europeans and much enjoyed



Fig. 5. "Lokoja—Bridge of Sighs."

by all. Last, and by no means least, the Mission ladies will arrange pleasant afternoon teas on the tennis courts. When we walk along the Camp Road, which is the main road of Lokoja, and pass over a brick and cement bridge, which has not inappropriately been named the "Bridge of Sighs," owing to the number of beggars and lepers who congregate there, the native town is reached. (See Figure 5.) (Whilst beggars and cripples are rarely seen at Calabar they congregate in large numbers in

Lokoja; coming into the town from all places north to beg.) As in Ireland it is the case of the eternal potato, so in Northern Nigeria it is a case of the eternal yam. Large numbers are on sale in the market. The best yams of West Africa are to be found in Lokoja market. (See Figure 6.) They are all shapes and sizes. Walking amongst the native huts I frequently saw women, and often men, busy preparing savoury dishes from yams, palm oil and chickens. The men are quite as good cooks



Fig. 6. "Lokoja—Market."

as the women. It is a novel sight to see the men on board ship at meal time busy cooking their chop (food). The fruits of Northern Nigeria are of a poorer quality than those of Southern Nigeria. The great delicacy is the pawpaw. It is a kind of Melon. After being cut open and the seed taken out, a little of the juice of the lime is sprinkled on it, and then it is eaten with a spoon. The lime brings out the flavour wonderfully. There is also the Mangoe pear, which is only eaten when very ripe. It

is something like the English pear but has a very large stone in the centre. In addition to the fruits and vegetables mentioned, red peppers, cobs of corn, onions, ground nuts, palm nuts, guinea corn, with a whole variety of flour made from these cereals are likewise on sale. From the ground nut, or monkey nut as it is called in England, an excellent soup is made. Red pepper is a very favourite flavouring with the natives, being found in nearly all their dishes in large quantities. They also enjoy the



Fig. 7. "Lokoja—Barber's Shop."

kola nut, which is imported from the coast towns. A visit to the water side would show the women with children strapped on their backs busy washing their pots and pans. The cumbersome perambulator is unknown in African towns. The children do not seem to be any hindrance to their mothers, whilst the child is apparently quite happy and often falls asleep on the mother's back. In one corner of the market, a barber has established himself. (See Figure 7.) The customer squats

down on the floor whilst the barber shaves him with a native razor. No soap is used. The beard is softened with cold water, and if necessary, the hair of the head also, for many of the men have their heads shaved as well as their faces. The mothers are very fond of having designs on their children's heads. This is accomplished by having part of the head shaved and leaving part alone. Some will have one half shaved and the other closely cut. Others have all the head shaved except a circular patch on the crown. Others again will be shaved down the centre of the head, thus saving them the trouble of parting the hair in the centre. Another will have square patches of the head shaved, the result having very much the appearance of an animated draught board. Whilst the men work designs on the head with the razor, the women are equally vain with their hair, spending hours in the dressing of it. On one occasion I was walking in the native town with the camera when the sound of the beating of foofoo took me into one of the compounds. A woman was sitting in the middle having her hair dressed. At sight of the camera she fled into the house. I was fortunate in capturing some of the hair. The combings had been placed on a low wall, probably to be made up into a pad later on. It is difficult to tell the difference between the hair and what is known as horse hair. After a little persuasion the hairdresser and customer came out and sat for their photographs. Whilst the men shave their heads to get the draught board design on them, the women arrive at the same end by making a series of parallel partings and cross partings; the hair being brought to the centre of the several squares and tied up with a piece of black cotton. Others work the hair up on the top of the head until the finished appearance is like the roof of a house. One woman I saw had the hair parted in the centre and plaited; the ends of the plaits finishing off in a fringe round the lower part of the head. Others arrange the hair in a number of bobs or buns. In fact they have every design imaginable. Leaving the fruit and vegetable market and passing through the wood and sugar cane section, the interesting iron and leather workers are

reached. The iron worker is very clever at his trade. From the roughest of ore he will make a hoe, a knife, or any article required simply with the aid of native bellows made from skins, and the crude hammers made from native iron. The leather workers are equally clever. From the Morocco leather, which is of goat skin, and which they dye red, yellow, black or green : slippers, sandals, boots, shoes, cushion covers, pillow covers, purses, and a host of other things are made. Some splendid designs are worked on the leather with the aid of a common penknife. There is hardly any division of labour amongst them. One man will commence and finish a piece of work. Time is of very little moment to the black man. If an article is not finished one week it will be finished another. They cannot understand the Englishman and his hurry.

Last August I had a very pleasant trip on the Niger to Jebba. I travelled on the Scarborough, the largest stern wheeler on the river. (All the large boats on the Niger have the paddle wheel at the back of the ship instead of at the side.) The first town I came to was Egga, on the left bank of the river and north of Baro, which is on the right bank. Egga is an important centre of trade for the surrounding district. The principal trade is in kernels, palm oil and shea nuts. During the wet season, the rise of the river divides the town into two islands. Now that the railway is to be constructed from Baro to Kano, the trading companies are opening stations at Baro and leaving Egga a small sub-station. Baro is a small village at the foot of a hill. After Baro, the Kaduna river, a tributary of the Niger, is reached. A few miles up the Kaduna river lies the capital of Northern Nigeria,—Zungeru. Near to Zungeru is the now important Kaduna bridge, over which the railway will pass on its way to Kano. The native population of Zungeru is small. Before the advent of the British Government, Zungeru was unknown. The town is not so hilly as Lokoja. The European bungalows are situated at the foot of a small kopje known as Lion Hill. As we proceeded up the Niger, we reached Shonga, another important trade centre and a place which will most probably become the

great cotton district of Nigeria. The railway from Lagos to Jebba will pass through the rich Hinterland of Shonga. Going ashore with my camera to take a few photographs all the women who were on the beach with their goods exposed for sale, rose to leave as I approached. They were afraid of the camera. The natives, especially the women, believe that as the camera takes a picture of themselves, it must take part of their lives, consequently they would die the sooner; therefore they run away at the approach of the camera. I had become quite used to having my pictures spoiled in this way. As my camera was one of the reflex pattern and made as portable as possible, I could walk about, ready to take anything that came my way without trouble. As the sight of the women running away was so amusing, I exposed a plate on them. I then busied myself with something in the opposite direction until they returned. When they had settled down again to the selling of their goods, I swung round and snapped them before they had realised that they had been photographed. Before the advent of the British Cotton Growing Association, there was little inducement for the natives to grow cotton. All that they required was just sufficient to make a few pieces of cloth on their crude native loom. (See Figure 3.) Now all that is altered. Instead of the native spending weeks in ginning the cotton by hand, spinning it into thread and then weaving it into cloth, he goes to the European trader and sells the unginced cotton for a piece of cloth. The cotton is then purchased by the British Cotton Growing Association, ginned, baled and shipped to England. (See Figure 8.) English money is unknown in many of the towns, whilst gold is very rarely seen, even by the Europeans. Goods are obtained either by barter or through the medium of cowry shells. Cowries have been the money of the natives for centuries. The price varies from 1,200 to 2,000 cowries for a shilling. Further up the Niger, salt as well as cowries form the currency. It is quite a common sight to see cones of salt and small piles of cowries on the floor in the market ready for exchange purposes.

In the native town I saw several pots of steaming food for

sale. People would come with their calabashes for portions of the delicacies. In another quarter men were busy with their penknives carving wonderful designs on calabashes. The bush provides the native with everything necessary for the laying out of a dinner table. Spoons, saucers, cups, plates, dishes, and every shape of water bottles can be cut out from the calabashes of the bush. After being pulled from the tree, the calabashes are dried in the sun. They are then cut as desired and the



Fig. 8. "Shipping Cotton to England."

seeds taken out. Beside the large calabashes, the natives make a very good earthenware pitcher for the carrying of water. At Beda, a large trade is done in earthenware pots.

A day's sail from Shonga and I was in sight of the famous Juju rock of Jebba. (See Figure 9.) Next day, Jebba, the first seat of the government of Northern Nigeria, was reached. After large sums of money were spent in the erection of bungalows, the place was abandoned as unsuitable, and the present

town of Zungeru built. Had Jebba been more accesible no more delightful place could have been found; but when steamers of not more than three feet draught can only reach the place during three or four months of the year, its unsuitability is apparent. The Juju rock is the outstanding feature of the place. It stands, sentinel-like, beyond the native town. The natives say that it has been put there by the chief of the Juju spirits to guard the places around. The tale goes that five white men have attempted to climb the rock, and that all five have



Fig. 9. "Jebba—Famous Juju Rock."

died within a short time of their return. The natives say that their death has been brought about by the spirit that resides in the rock. As a native said to me: "S'pose white man go climb dem juju, he go die." Naturally I did not contradict him. It is a wonderful rock formation, standing alone in the river, and considerably higher than any of the surrounding rocks. The hills around, of different heights, give quite an English appear-

ance to the country. All the rocks are covered with trees and creepers, and as I was there in the wet season, everything was at its best. There seemed to be an entire absence of dead trees in the bush and shrubbery around, but on closer inspection I saw that the dead stumps were covered with brilliant green creepers. Having dropped anchor at the trading station, the captain and I went up to the rock in the ship's surf boat to take photographs. I shall always remember that journey for this one reason. Keeping near to the edge of the river to avoid the strong current as much as possible, the boys would pull at the trees as they passed to give impetus to the boat. One tree in particular at which they pulled happened to be heavily laden with ants. The fact was forcibly driven home to us—I might say impressed upon us. During the next few minutes we were bitten from head to foot. After that we avoided the trees as we would a plague. By the time we returned the unloading of the ship was well under way. A large cargo of salt had been brought up. It was remarkable to see small children carrying fifty-six pound bags of salt on their heads with apparently little trouble.

On arrival of a ship, all the women and children come over from the native town—which is on the opposite side of the river—to assist in the unloading of the ship. The discharging of the cargo is effected by piece-work, so many cowries being paid to the people, for each load carried. The loading of the ship is done in the same way. For every basket of palm kernels carried to the ship, the person is paid so many cowry shells. Men are stationed on the way with cowries. (See Figure 10.) As the labourers pass, from five to ten cowries are paid to them according to the size of their load. I was fortunate in getting some good snap shots of the women running to and from the ship with their baskets in their haste to acquire riches. The race for wealth can well be understood. A rather amusing incident occurred in the loading of the ship with kernels. A small boy had got a calabash full of kernels, and was just going to the cowry men for his payment when someone accidentally knocked

the calabash off his head. The boy gazed for a few seconds at the calabash and kernels on the ground, not knowing what to do. His face was a picture. Suddenly it wreathed in smiles. He seized hold of his calabash, raced back to the store, got another load, and presented himself afresh to the cownry men. This reminds me of the happy disposition of the natives. I do not recollect seeing a man downhearted excepting the professional beggars who make their living thereby. The Hausas



Fig. 10. "Loading Steamer; paying cowries to the women."

always look on the bright side of things. Even when someone falls a cheer goes up for the poor unfortunate one, whilst the person cannot help but rise with a smiling face. Having got the complement of cargo, including a good load of cotton for the ginnery at Lokoja, the return journey commenced. The bush seemed to be even grander than it had been when I came up. The flowering creepers, entwined amongst the trees, tended to make the bush a wall of green. Except for the boat ground-

ing once, and once being carried into the bush with the current, nothing of note happened. Men were ready waiting at Lokoja beach to unload the ship. Whilst women work the cargo on the upper Niger, men do it on the lower Niger. In Lokoja and places lower down the river the women are engaged in the market or in the preparation of food for the men.

After a few more very very short months in Lokoja—during which time I had the good fortune to get the series of photographs of the native loom and also to learn a little of the native's method of weaving—my time came for the gathering together of my goods and chattels and joining a down river boat en route for home. On my way I spent a short time in Lagos, at the invitation of a very kind friend, for the purpose of getting photographs.

Owing to the innumerable sand banks around Lagos, the mail boats are unable to enter Lagos harbour, and have to drop anchor outside in the roads and await the arrival of a branch or bar boat. The boat arrived outside Lagos in the forenoon. Through glasses the branch boat could be seen struggling to get off a sand bank. After some time she dropped anchor as near to us as she could with safety and transhipping commenced. Lagos is the Liverpool of West Africa. There are over three hundred Europeans there. Landing on the Marina, which runs along the front of the town, I was astonished at the number of large buildings there. Next day, my host kindly got an interpreter for me, and he in turn got a labourer to carry the camera. The Marina and the buildings thereon provided me with plenty of opportunities for taking photographs that day. A French trading company has erected a splendid four-storey building, whilst a little further is the Bank of British West Africa, a building which would be an architectural adornment to any town in England. Proceeding along the Marina, I came to the Government House—a huge building for West Africa. As the very popular governor of Southern Nigeria—Sir Walter Egerton—was away on tour, I obtained permission to take a few photographs. In the grounds

was a wealth of flowers—many of them imported. I also saw two or three tennis courts and a kitchen garden. Carved chairs were placed against the walls of the entrance hall of the house, whilst a large Turkish rug covered the floor. In a room to the right I saw a kind of library, whilst on the left was an entertaining room. As I was passing through the town the next day, I saw Sir Walter Egerton's secretary returning on his cycle. Later in the day Sir Walter Egerton arrived in his motor car. It is almost incredible that motor cars and motor vans are in daily use on the West Coast. On another day I rode out on the steam tram to Iddo to take some photographs of the railway there. This line is the one which is to be carried up to Jebba through Oshogbo, Lokoja and Illorin. With the extension of the railway it is hoped that many new districts will be opened out for the growing of cotton, and that in a very short time after the completion of the line, the cotton industry will have become one of the greatest industries of the West Coast.

Looking from the top of the French Company's stores, or from the top of the Church tower, one sees a bewildering number of house tops, and for the moment it is difficult to realise that it is a west African town that is being looked upon.

Wandering through the streets, the number of large and architecturally beautiful buildings is very great. Gazing at the Bank building, one wonders when Sir Alfred Jones will be persuaded to erect similar buildings at the important centres of Nigeria. The Bank in Lagos enjoys the privilege of the Government's patronage. Let such a favour be extended to the Bank by the Governors of the two Nigerias, and let an invitation be given to Sir Alfred Jones to establish branches of the Bank of British West Africa in the centres of Nigeria, especially at Lokoja and Calabar.* At the present the Government conducts its own banking business. This is work that should be carried on by a public bank. Adam Smith said that the banks of Europe had constructed a broad highway along which the commerce of the world ran smoothly. This broad highway is lacking in Nigeria. Until it is constructed, commerce will be

retarded. Will the Nigerian Governors follow the example of the old Lagos colony and place their financial matters in the hands of the bank? Now that there is a prospect of the country being opened out by railways and its trade considerably increased, the financial working should be placed on a sound footing.

* Since delivering the above lecture a branch of the Bank of British West Africa has been opened at Calabar.

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SOME ANCIENT DREAMS OF ITALY IN STONE AND PAINT.

By J. REID GRAY.

(Addressed to the Society in the Geographical Hall, on Tuesday,
October 1st. 1907.)

THE subject of my notes is one that was altogether unknown to me only a year ago.

Italy till then had not come within my "travel" pleasures.

The idea of the visit was primarily to see the cities, *i.e.*, the man-made glories, rather than the lovely country with the varied grandeur of its mountains and plains, its rivers and fertilities, although by no means ignoring these favours of nature.

The island of Capri, Naples, Pompei, Rome, Florence, Pisa, Genoa, Milan, Pavia and Venice all had a turn, and kept two elderly wanderers busy for a couple of months drinking it in.

My friend was the Literary man, and I still await his story. I plied the pencil and brush as a humble impressionist with no thought of a show beyond the walls of my "den," or claim of value for my notes beyond the mere jottings of a bird-of-passage.

The panoramic sights were so speedy that with the acutest observation and the tersest of notes they often proved to be mosaics, sometimes broken and difficult (though delightful) to try and re-construct.

Augustus and Tiberius had dreams of Capri and built castles there.

Naples has for outskirts Pozzuoli and Baiae—a two-volume classic in Stone,—Temples to the gods and Arenas for the sports of men.

Pompeii. The City *splendid*, it must have been, from the wealthy and powerful dreamer's point of view. The painter's Art still visible there shows to what excellence that art had reached, in conception, technique and harmony. The very constituents of their colours have never yet been re-discovered.

Rome within the walls, with its Baths, Forums, Coliseum, Basilicas and Palaces, all tell of dreams that grew embodiments. The Vatican alone were it but for the genius of Michael Angelo is supreme in treasure, stone and paint.

Pisa with its unrivalled quartette of Leaning-tower, Duomo, Baptistry and Campo Santo, its *Frescoes*, great and delightful.

Florence vieing with a vaster crowd of the flights of genius, St. Lorenzo, and the riches of the Medici.

Genoa's streets of palaces and *matchless* Campo Santo.

Milan, the possessor of that poem in gothic masonry and sculpture, the Cathedral, a dream of the Vicontis (whose earthly failings have been so well imaged lately by Miss Marjorie Bowen in her story of "The Viper of Milan"), and of Angelico's masterpiece "The Last Supper," in the Church of the Gratzia, the sweetest of all renderings of the subject it has been my lot to see.

Pavia. A place for pilgrimage. Its boast, the Certosa and Monastery founded 1396 and still in use. A glory of the Lombard-Roman school, utterly at variance with the glory of Milan, yet a gem of worth which neither sketch nor words can *much* help to realize.

Venice, the altogether man-made city—in the sea—which draws the traveller by its history and its monumental dreams, St. Mark's, the piazza, the Doge's Palace, the distant St. Giorgio across the waters, and the unique quiet of its horseless traffic.

After *this* cursory cataloguing of sights, you can readily imagine, that vastness as well as detail impresses one as inherent in the schemes of Ancient Italian Architects, and thanks to the

spirit of the nation, most of these interesting piles are to-day a nation's care.

My "bits" of impressions in paint are mostly of humble things, records that I could attain to. The great things I have been naming, altogether beyond me.

Capri, as an island for the artist to delight in surpassed all my preconceptions. The coast villages and the hill-towns are quaint and full of charm. From strand to summit every feature strange and attractive.

The "Sheer" rock-faces tufted with luxurious tangled growth, the square white houses, flat of roof, the window-less openings, giving great depth of shadow, steps and landings past counting by way of ascent for both man and mule, tortuous though well-made roads for wheel-borne transport cross those landings every now and then, suggesting that some General Wade of Italy deserved the blessings of after generations for his road-making.

The whole gave one a feeling of being *Far from England!* all seemed "Syrian," a quite new sensation with a charm very riveting.

Picture a town of these white cubes set in the glowing colours of this land, reflected in a calm sea as in a mirror. A sea so blue, as to be past belief until you've sailed it. It is seen at its most wonderful blueness here. Whether it laps against the white sides of an anchored yacht, or the black sides of a big steamer, the rocky shore, or inside the famous Grotto, it is all the same in every circumstance.

The towns of Capri and Ana-Capri are perched high on the mountains, the steps upwards begin almost from the shore, very picturesque, cut as they are in the rock face, their angles worn and bearded with vine-twigs trailing down in such unkempt fashion that artificiality is out of court. The hedge-rows, too, are strange, mostly cactus, of the prickly-pear bearing sort, and these are the common or garden hedge of the poor man of Capri, needing no tending and largely self sown.

The towns have distinctly architectural claims, roomy

market places, court-house churches, hotels and post, built for most part on flattened shoulders of the mountains. It was distinctly odd to leave an open space by a dim-lit archway and find it open again—as the rocks permit—to further parts of the town, again, into a tunnelled semi-darkness, the doors of domiciles can be discovered, on whose brass plates one may read Mr. So and So, Attorney; or Mr. B., British Consul. Once more out into the open—walls keep you on on the seaward side—are rare points of view for sunset glories.

The ruins of the Castle built by Tiberius, once a dream, like a dream too has faded, no glory left now, but the thought of how wise he was in the selection of a building plot, appealed to one greatly! Fresh and airy, it seemed midway to heaven. Higher brows run up a thousand feet above this 800 feet level, but their crests were *enjoyed* from the town's heights.

The coast town of Marina is a lovely place (a Clovelly in the East) with a beach wide enough to haul boats upon, and as the sea is practically tideless and winter unknown, their only trouble is the storm. Swarms of boats and boatmen are in evidence. Sail and oar—the delightful way many of their sails are clouted (mended) with bright orange and yellow patches on tawny originals, is purely an unconscious expression of their joy in colour. Little wonder it is so loved by men of the brush.

To approach *Naples* as we did at evening, sailing from Capri with a gorgeous sunset behind us, gave all the conditions that even a J. M. W. Turner could have desired.

A mountain city rising out of the sea with terraced heights, crowned high with the impressive bulk of St. Elmo. Big Vesuvius sending up a dense brown mass of ground-pumice—a cloud of white vapour over that again, the sleepy cone itself a shadowy impassive greatness, as background to the scene made up a sight fit to hold its own against all comers.

Ashore and mixing in the crowd the city gives impressions of prosperity by the bustle of its streets. Unlike New York, where cabs are few and fares are ransoms—Naples swarms with

them, and as all Naples *appears* to ride, fares are very cheap. Some American ladies assured us they regularly had a long "lift" for five pence.

The narrow hill-streets flaunt in the sunshine an endless display of washings out of windows, though with less admixture of red and blue in the show than Genoa gives, doubtless because of the still hotter climate suggesting the freer use of white for wear—still, those alleys glow: blue skies, deep shadows, green louveres, flowers and fruit. It is a fine sight to stand with one's back against the sea wall which runs along the strand and protects the Chiaia from the bay. Gardens face you, a mile in length along the front, studded with statuary in bronze and marble, trees evergreen, a Rotten Row for equestrians, (music) and above and beyond the trees rise the dotted villas, mansions, terraces, all set in foliage, sage, yellow, red, up to the summit: a creation to be proud of!

To look upon the reverse of this upland view, *i.e.*, from the heights of St. Elmo to look down, we drove there. The zig-zags of the ascending streets and roads gave a wonderfully interesting experience. Starting from the shopping centre of the city, on through second-rate *old-town* streets of artisans and "*small*" capitalists (huxters), higher still where garden patches are cultivated by cab-owners and the like, then to terraces of the well-to-do: wide fruit gardens, and, finally, St. Elmo: a full two hours' perpetual ascent.

What an idea it must have been to build such gigantic piles on such cloudland elevations. They dwarf the biggest terraces into insignificance. Inside the walls we went from cells—with their ancient equipments of chains and torture tools, to the highest masonry: there leisurely took in the sweeping bay and Vesuvius, with the islands of Procida and Ischia in the distance, a glorious prospect and worthy companion to the "upland" look.

That portion of the pile—the now disused monastery of St. Martino, together with the Church,—is a perfect dream to-day. No glory of its buildings or grounds has departed, and

except that it is not now an *active* hive of brothers, it is a telling example of Religion's worldly splendours and surroundings.

Taken possession of by the Government, carefully kept, its stores of past industry and genius in art, in garden, pergola, cloister, stately chamber, or cubicle alike, shows signs of much devoted labour. No ceiling or wall but bears the stamp of brain and master-hand. Each room great and small is catalogued in three languages to help the student (or mere visitor) to the enjoyment of it all.

I felt a plethora, past all my power of memory to register, yet the feast was great and much to taste.

The Church alone is *among* the richest in all Europe. Every chapel a treasure-house! The beautiful screen of traceried marble dividing off the choir is a poem in itself. The walls are treated in fresco, biblical subjects mostly. It is no use naming the artists, the fact remains that they all, or nearly all, were gifted. And the marble inlays in columns and wall panels give a richness, not common even in priceless schemes of decoration. Statuary, bronze-grilles and candelabra, jewelled staffs and carved ivories indicate the things of beauty which abound, and are past recounting. Yet Naples has more than 300 churches, to indicate the culture in art which never scarce seems to have bubbled over throughout Italy when so many buildings were dedicated to Christianity, and a crowd of geniuses spent their life's best in the absorbing enthusiasm of building and enriching.

Outside the "domestic" part of this Royal Eyrie (Duke of Calabria, 1650 or so) is the world-famed Belvedere, a balcony which runs round an angle of the building connecting two apartments, projected, as it were, out from a tower (the height is so giddy) and the look of the structure so slight, when contrasted to the huge mass to which it belongs. Friend (the L——) dared not to venture upon the breezy footing and wander round the unique camera! I dared, and felt repaid, *such* opportunities are rare!

What between the National Museum holding ancient

treasures unequalled under one roof (the field of their gathering was great), and modern works in the palaces, Naples had an irresistible spell, it may be that the ever visible ocean and the mountains near and far were unconsciously in the scale *along with* man's achievements, but the bond grew tighter every day.

By way of change from city sights a big day's driving gives a new and refreshing pleasure. After a visit to Virgil's tomb advantage was taken *en route* for the classic land of Cumae and Baiæ to visit Solfatara, a so-called extinct volcano believed to be, long ages ago, greater than Vesuvius, but it blew its own head off, and now the rim of the crater is four miles round, a vast, flat, sulphur field with a crust known to be only 30 feet thick or so, and by way of demonstration some youths drew our attention by dropping stone balls 20 to 30 lbs. weight, that we might hear the hollow sound, and there was no mistaking it. Sheer astonishment fixed us when at one spot, which is protected and in charge of an attendant, we looked down into what appeared to be boiling liquor in a cauldron, but in reality is the *largest* vent in the crust, steaming and boiling away as so much coarse porridge. The attendant poked an iron ladle into the dancing, spluttering mess, and *dished it* near our feet. It was scarcely credible to find no liquor at all, but dry stones, rather bigger than peas, and when they got cool enough to handle, they were brought away for the curio shelf!

Down the mountain and following the coast by hilly roads, fig-hedged and cactus-bordered, by Pozzuoli, once a flourishing port and the place where St. Paul and St. Luke landed when sent by Agrippa to Rome. The whole coast bristles with the remains of temples and villas which must have made it—with art and nature combined—a wondrous sight, two thousand or more years ago.

Merchants and rulers, rich beyond the dreams of avarice, as well as philosophers and poets flourished here. The Temple of Serapis (Jupiter), a vast record of the ambitious flights those ancient architects dared, has, even as a ruin, had an eventful history: uninjured it had sunk bodily with the coast around, a

matter of three or four yards, until the mosaic floors were under the sea level. New floors had been laid to meet the trouble, dwarfing the halls by so much.

Solfatara, once again active, filled it with lava, then it was abandoned: another volcanic upheaval raised the ruin, the three remaining columns still erect showing that during the centuries of immersion they had been literally honeycombed by sea-worms (*Lithodomi*), up to the sea-level mark. They are saved again—for the present—out of reach of said industrious wreckers, a curious and interesting sight.

This same upheaval also raised a new mountain close by in one night, and there it stands to-day 450 feet high, vine covered and ancient enough looking already. Its name is Monte Nuovo!

Baiæ and Cumæ, ancient *cities*, are both villages *now*, of small importance, but big with old associations—mind as well as matter; it was delightful to sit and conjure up as best one could this veritable land of temples in the zenith of its glory and worship.

Horace says, "Nothing in the world equalled this spot."

The meeting place of the gods, beautiful shrines had risen to Diana, Apollo Neptune, Vesta, and the rest. The country round is particularly suited to foster the belief in things uncanny. The quaking earth, the lakes of noxious gases, *old* Avernus and Lucrino—the sunless caverns all lent their weird mysterious powers to work spells.

There is a wonderful old Colosseum partly roofed—all still in strong condition, with a strange trait possessed by its walls. A brick left out here and there forms an orifice which, when spoken into, carries the faintness of a whisper half round the great building, and can be heard by a listener there quite distinctly. Query. I wondered did this find practice with the oracles long ago, for messages from Hades to enquiring mortals? But I wondered often in that land, and was now and then inclined to say with Dominie Sampson, "Prodigious!" Certain it is that the grand army of cultured pagans gave this corner

of Italy a deathless interest; an army for whom the scholarly world would mourn indeed were their records lost beyond recall.

Pompeii, on the other side of Naples, proved for a time an enigma great and difficult. In its prime it was but a place of 25,000 inhabitants, its streets very like those of southern Italian towns to-day—nearly all narrow, the houses rarely two stories high, except the public buildings and the villas of the wealthy landowners. These villas, be it noted, are in the streets not suburban, but in the heart of the town, as still in many parts of Rome.

The position of the town is on the flat base of Vesuvius four or five miles from the crater.

It was very difficult while walking its silent streets to imagine it and its people alive and active two thousand years ago, more difficult somehow than with ancient Rome in the Forum, for *it* is mixed and hedged round by the living, but Pompeii is all lifeless, its houses *all* roofless, the exceptions are so few. The numerous small houses or single apartments which were the homes of the many, *must* have been ill-conditioned: streets bounding blocks of houses on every side, so that no gardens and scarcely back-yards were the lot of craftsmen and labourers. No evidence of workshops, set apart as such, is seen—nor stables—and yet the wheeled vehicles must have been many as the great boulder stones that pave the streets are worn into ruts both deep and smooth.

These streets are curiously formed, no parallel to them, so far as I have read, exists elsewhere to-day. In many of them traffic must have gone in one direction only, for two carts of the gauge of those wheel ruts could not pass, besides, there are stepping-stone obstructions at regular distances apart that no horse harnessed to a cart could get over at all. To explain: in these *narrow* streets the side-walks are three to four feet wide and eighteen inches high above the centre way: now to get from one side-walk to the other, a series of stepping-stones as high as the side-walks and about two feet square stand up out of the

cart-road; and the folks could cross on these, even when the streets were deeply flushed with water or storm rain.

As for the wheeled traffic, it dawned upon me that slaves were the cattle employed (*they* were classed and sold with cattle) to draw their laden carts. Dodging the stepping-stones while the axles were high enough to straddle over. This idea I have not seen suggested anywhere, but it is certainly *a* solution of the problem.

That slaves were plentiful is known, and that their quarters were wretched is also known—the sharp line of demarcation between the grand villas and the ruling families and the four plain walls of the artisan's dwelling and workshop in one, is hard to square with each other. That the latter were artists is past dispute, the National Museum at Naples groans with the weight of evidence, nothing from a salt spoon or a bodkin to the great bronzes and altars of sacrifice but *tells* their makers were artists. And, though the extensive buildings of the Mother Temple, the Great Forum, the Triangular Forum, the Temples of Isis, Apollo, Jupiter, and others of the gods (not to name any of the houses of the great families) are but ghosts of Pompeii alive, the ruins are so rich in evidence of the unlimited ideas in plan and execution, that the columned vistas are like ranks of *soldiers in line* almost, whilst every Statue, Consule, Seat, Sundial or Fountain, show the charm and delicacy of Greek work perfectly rendered.

Pompeii *as it is*, has a uniformly blue-black colour to show you *in the mass*. The excavating has gone through the rough plaster faces *to the stone* in nearly the whole extent of it. The Tuffa of which it is built is bare inside and out in *most* of the houses, the roadways are ditto, and *but* for sunshine and shadow with a rare bit of greenery within its walls, it would be dull indeed and monotonous, hence the difficulty one had in trying to picture it as those white Syrian-looking houses of the living in the neighbourhood; but after spending considerable time in Torre-del-Greco and Annunziata, noting that one room, twelve to fourteen feet square, had the master working bronze with

crucible and bench and vice and files making delightful little tripods and statuettes, the mother with her sheet-tin oven out of doors, the signs of bedsteads *sided* for the day and scarce a sign of other furniture.

Next door a marble mason (sculptor) busy on an alabaster communion table, using a drill that made one smile, primitive past doubt—a direct descendant of the drill of Pompeii—just like a screwdriver; he held it with left hand against right shoulder, the point pressed hard into the alabaster, whilst boy of thirteen (or less) gave it the drilling action by pulling a strong cord wound about the centre bobbin, right strenuous work for the 'prentice—left and right alternate pulling as hard as he was able; the carver, every half minute or so, putting a pipe of bamboo to his lips, blowing the powdered dust from the drill-point without any stoppage of the chasing.

Next adjoining cubicle—a wine shop, its counter a small letter L-shaped thing, the jars let into the fixtures, in every way the repeat of those in Pompeii; and so I got to see the dead old city (in my mind) astir again, and the craftsman raising those "bits of history" that live through the ages to tell us even more than papyri, what manner of men and dreamers were this ancient race.

Evidently, all the labours of these occupants of uninteresting domiciles were swept into the grand ones where everything was pleasing, from the frescoed walls of bathrooms and wardrobes to the cloistered walks round the bijou garden plots, for the largest of these garden plots were but small, yet they were dignified by their setting. A central fountain, tables, bronze or alabaster, or both, Hermes, groups of statuary, trailing vines and flowers (with apes and peacocks, from Tarshish I suppose). One has to picture the men in flowing robes, full-bearded or close-shaven, their feet in sandals, their slaves attendant. Modern evening-dress and funnel hats could have no place there amid the classic atmosphere of Temples and a Forum that called for daily rites of some sort to propitiate the gods and *ave* the common people.

That there was humour in the old city is past questioning, and if brevity be the soul of wit the business signs still visible on the street fronts show it. A symbol in most cases sufficed—a serpent for an apothecary, a flagon for a wine-shop, a vase for a carver, and so on, with other simple and effectual signs to indicate the occupations. Some of the larger houses, with passages from the street-gate to the roofless hall (Atrium), are laid in mosaic with equally telling ideas worked into the designs, such as the text, "Salve Lucra," which, freely interpreted, says, "You are welcome if you come to trade!" implying also the contrary. Another has a savage-looking dog held on a chain—all in mosaic—with the well-known legend, "Cave canem (beware of the dog)" underwritten.

Some painted drawings on the plastered walls help us to the forms of their household gods. Interiors were frequently the subject of their decorations, so that all goes to confirm the fact that *out-of-door* life was their mode—when not asleep!

Two theatres, one capable of holding every grown-up in the city, made one wonder who would look after the *bambinos* when it was crowded. The lesser—a *small* replica—held 2,000, then an ampitheatre beyond the walls, for wild beast revels and the like—all State-owned; it looks uncommonly like a partial communism when *entertainments* were concerned.

Compared with these roomy places, the one prison was a surprise in smallness. In one of its cells may still be seen all that is left of an inmate! Bent and crushed by the falling mass, he had evidently tried to break a wall and get liberty, but in vain, for he is on all fours with a hammer head beside him.

The last thing I looked upon was the Temple of Mercury and the still perfect altar of sacrifice there, sharp and beautiful as the day it left the sculptor's hands.

Rome. To register a deep pictorial picture of the Eternal City is quietly to view it from outside the walls a mile or more away at

noontide. Across the Campagna dotted with portions of the graceful aqueducts, cattle in plenty, their strange neck-bells tinkling as they move, the brown old Tiber in these rural parts flowing between green banks and the distant city within its walls, *white*, smokeless, vast and silent as if it were tenantless: all in sunshine under a blue heaven—thus we saw it, a beautiful dream as much as an embodiment of man's labour.

On closer acquaintance the *almost* incredible vastness of some of Italy's ancient schemes is realised. When one looks on the remains of the baths of Caracalla, and the even vaster ones of Diocletian, it gives one pause. Ten Westminster Abbeys with room to spare could be set in either of them. Systems of water supply and heating, lead piping and clay channels all considered from the beginning, tell the builders knew their work from start to finish, before the start was made. These buildings had sculpture-halls and picture galleries, promenades and book-rooms. Every bath floor, mosaic in fit design for such great areas. Walls 3 *yards* thick, and arches just as strong, three storeys high, built with a mortar that has knit them like the very rocks together.

The Cathedral of Rome is not the great St. Peter's, but the Church of St. Giovanni of Lateran, built on the plateau of Monte Celio, the walls of Rome bounding one side of it, from whence can be seen through a fringe of sparse-clad trees a lovely prospect full of colour. Campaniles and lower red-roofs jag the line against the smoke-coloured Alban hills beyond—a perfect spot to build a Cathedral on. St. Giovanni—like many a religious pile in Italy, is very much more than a church. It has its baptistry, cloisters, palace, picture gallery and museum, Relics, in plenty. The Holy Stair is here down which Christ walked from the Tribunal of Pilate, in Jerusalem. Luther is said to have been ascending this on his knees (the only way still permissible) when the text “The just shall live by faith,” entered his mind. He arose and left the place abruptly.

The heads of the martyred Saints Paul and Peter are both

here—rarely shown. The whole interior has a *general* effect, grander and brighter than the great St. Peter's, not more stately! mark you.

The frescoes are still very fresh on walls and dome of the baptistry. There is the historic font of green basalt in which Rienzi *bathed* in 1347. The cloister *screens* of marble call up those dream of Pisa's Campo Santo.

Of Rome's numberless treasures I dare not even name those I saw, the list is so big with interest. Admittedly the hub of *ancient* Rome is the Forum Romanum, but the wreck is so complete that ninety-nine out of a hundred can scarce approach in their imaginings any reconstruction of what it must have been in the days of its splendour. With Hadrian's tomb, it is otherwise—and though reft of its outside show of marble columns, cornices and statuary, by vandal hands long centuries ago, it is yet full of stately beauty in the russet of stone and brick, and looks enduring as earth itself.

Internally, from the very entrance, a great road of 30 feet wide, and 12 feet high to its arched ceiling, winds up a gentle spiral and leads past dungeons on to open courts, great chambers and bastioned ramparts.

Like Pompeii, it had been "internally" silted up for centuries, though not with lava.

During the time of Gregory the Great, when Rome was plague-stricken, he saw as he crossed the Tiber a vision of St. Michael over this Tower, sheathing his sword—a sign from heaven that the plague was stopped that hour, and so he caused the name of Hadrian's tomb to be henceforward the Castle of St. Angelo.

A heroic-sized statue, in bronze emblematic, now guards the hospital midway up the pile, whilst a church—St. Michael among the clouds—a beautiful title I think—crowns the ramparts. Here, the view of Rome and the country around from the Sabine Hills to the sea is very fine, and full of history.

That dull time "the middle ages" intervened, and until

Pope Clement, about 1530, set to work unearthing, nothing was known of the wondrous internals of the great Rotunda.

He reinstated Hadrian's audience chamber, his Hall of justice, caused it to be decorated by Paul Farnese, and there it is, a master's work still delightful to look upon. This dream in paint shows the features of its ancient "forbears" distinctly, and though Pompeii at that date had long been lost sight of, the treatment tells that its unique art had even then *some* tradition and vitality, finding expression. A most interesting link centuries apart, helping one to picture Pompeii a *little* clearer, but in its un-ruined completeness.

That Hadrian's dreams were of the "vasty" type can be understood when one realises that his villa at Tivoli—rich in all conceivable possessions, covered miles in extent, and is still a marvel in wondrous ruins and natural beauty of surroundings. Of the villa Borghese, the once-was abode of "Pauline"—sister to Napoleon—I merely mention one apartment, because it further gave a key to open and look in upon—what might have been—a Pompeian lady's chamber—"before the rain of ashes fell." Ceiling, frieze, walls, doors, seats, tables (to globes and golden fishes), a revelation of perfect taste and dignity. I owned me worshipful. The image set up was crowned and Pompeii lived again!

Pisa. That wealth in plenty flowed in this old City and Republic long ago, and that flush times gave with no niggard hand the plus beyond "living" requirements, to raise such lovely marble piles is quite certain. The Duomo is a study, the outer effect of the roof of the nave is its weakest, but the mere grouping of roofs and angles, transepts, chapels and dome is happy against the sky by night as well as noonday, and a single look upward from the inside confirms the happiness, full of thought in idea and full of joy in labour.

The Campo Santo—rich within the gates, presents plain walls to the outer world, but the disclosure made when once across the threshold is a big surprise. A lovely Tuscan-Gothic traceried screen in mellowed white Carrara marble fronts the

arcade and bisects the great quadrangle. Frescoes decorate the arcade walls in immense panels with subjects—History and allegory—St. Ramieri's "Return from Palestine," Solomon and Sheba's Queen, Triumph of Death, full of power and genius, the story of Job, etc. Giotto and Laurentii, the authors of those out-of-doors creations in paint, are perhaps not surpassed by any in existence. The famous leaning tower has an uncanny look about it, beautiful past expectation in mass and detail from its base on the skewed and sunken pavement up its seven storied galleries to the topmost course.

The Lungarnos—those open, breezy, river-side ways with old-world air of quiet uncommercial stir, and the smokeless atmosphere suggests ancient Mechlin, spread out and glorified.

Florence. Housed in the home of the Trollopes, we lingered on the banks of the Arno and thought of Dante, looked on the spot where Savonarola met death—traversed the Ponte Vecchio with its clustering groups of houses, quaint past sketch or words to convey its oddities; admired the doors of the baptistry, the Campanile and Cathedral; saw a band of the Misericordia take some poor fellow to his resting-place, and from the outskirts of the town, among plebian homes, looked upon Fiesole.

Venice. A chance coincidence housed us where Ruskin lived and wrote his "Stones of Venice." This house—the Villa Calcine (pronounced Kal chee na)—bears on its modest front a memorial tablet, recording the city's gratitude and admiration for his words and works.

St. Mark's is all that *he* has said of it, from entrance to high altar, from floor to highest dome. Many visits were paid, happily one when no service was in progress. The beautiful light shone through the dome windows giving a glamour to carvings and the golden-ground mosaics which cover arcades high and low. It was enough to gaze and hold one's breath and wonder! To *do* more seemed hopeless, so *extraordinary* is the scheme of its architecture, contenting oneself with an effort to try and burn into the memory, a corner, over and to the left of the screen across the apse.

In the Doge's Palace are dreams in paint as good as they are great in size, the biggest in the world in fact. The Paradise, by Tintoretto, 90 feet by 30 feet, had been taken from the wall and re-mounted on a new stretching frame, some slight frailties in the canvas repaired. It was a *sight*—that repairing—as convincing to me of Italian ability and patience, as the corner pillar of the palace with its “Capitol of Paradise,” said by John Ruskin to be the acme of superb sculpture.

There is an idea abroad in England that Italians at home are largely of the Lazaroni, and that, “begging” is a chief occupation. The evidence of my senses and observation give this notion the denial direct. And I wish that Italy was but nearer to Lancashire that I might re-visit it now and again for the joy of its heaped-up labours and its colourings.



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"A WOMAN'S WAY THROUGH UNKNOWN LABRADOR."*

By MRS. LEONIDAS HUBBARD, JUNR.

(Addressed to the Society in the Geographical Hall on
Tuesday, October 8th, 1907.)

IN the north-eastern portion of the Dominion of Canada is the great Labrador Peninsula, which, though first to be discovered, is of all the regions of North America the last and least explored. North of the fifty-fourth parallel, it is nine hundred miles in extent from Hudson Bay on the west to the Atlantic Ocean on the east, and between its southern boundary, the Gulf of St. Lawrence, and its extreme northern point at Hudson Straits lie eight hundred miles of almost unbroken wilderness. The peninsula is estimated to contain 511,000 square miles, its interior being a vast elevated, rocky, irregular plateau, in places standing well out to the coast and cut by valleys down which great rivers carry to the sea the waters of its myriads of lakes and streams.

Knowledge of the interior of the Peninsula was until the sixties confined to that obtained by the agents of the various

*We are indebted to the American Geographical Society for permission to print this paper.

Hudson's Bay Company's posts established at long intervals on the coast and in the interior; but, in accordance with the policy of the Company, their findings were not recorded. One notable exception to this rule was that of John McLean, to whom falls the honour of being the discoverer of the Grand Falls of the Hamilton River. In 1838, 1841 and 1842 he crossed and recrossed the country lying between Lake Melville and Ungava Bay; but the accounts of these journeys which appear in his "Twenty-Five Years in the Hudson Bay Territory," are very incomplete, and he left no maps.

In 1862, Henry Yule Hind made his survey of the Moise River. In 1887, Dr. R. F. Holmes, an English traveller, made an attempt to reach the Grand Falls of the Hamilton, two hundred and fifty miles above the mouth of the river, but was obliged to return without accomplishing his purpose, his crew proving inefficient and his outfit inadequate. In 1892 two expeditions from the United States reached the Grand Falls—one from Bowdoin College under Messrs. Carey and Cole, and the other under Mr. Henry G. Bryant, recently President of the Philadelphia Geographical Society.

But the great Labrador explorer is Mr. A. P. Low, Director of the Geological Survey of Canada. More than that of all others, his work has tended to dispel the darkness of mystery so long shadowing the interior of the great peninsula. Yet Mr. Low's work, which extended over a period of ten years, and which is set forth in the reports of the Geological Survey of Canada, had left the north-eastern portion, lying between Lake Melville and Ungava Bay, still virgin field for the explorer, where remained two large rivers to be traversed and mapped.

On the 15th July, 1903, Leonidas Hubbard, Jr., my husband, with two companions, set out from North-west River Post, near the head of Lake Melville, for a canoe trip into the interior, which he hoped would not only afford him an interesting wilderness experience, but also an opportunity to explore and map one, and perhaps both, of these rivers, the North-west River draining Lake Michikamau to Lake Melville, and the

George River draining the northern slope of the plateau to Ungava Bay.

Misled by information obtained at the post, which corresponded with the indications of the map he carried, that of the Geological Survey of Canada, Mr. Hubbard took the Susan River, which enters Grand Lake at its upper extremity, instead of the larger river draining Lake Michikamau and entering Grand Lake at the head of a bay five miles from its western end. The Susan River led them, not by an open waterway to Lake Michikamau, but up to the edge of the plateau, where they became lost in the maze of its lakes. When within sight of the great lake the party was forced to begin a retreat which Mr. Hubbard did not survive to complete, and the object of his expedition was not achieved.

Nevertheless, in utter physical weakness, utter loneliness, in the face of defeat and death, he yet wrote that final record of his life, so triumphantly characteristic, which turned his defeat to a victory immeasurably higher and more beautiful than the success of his exploring venture could ever have been accounted, and thus was compassed the higher purpose of his life.

That his lesser purpose might not remain unaccomplished I myself, in 1905, undertook the conduct of the second Hubbard Expedition, and, with the advantage of the information and experience obtained by the first, a larger crew and a three weeks' earlier start, successfully completed the work undertaken two years before. The map which this article is intended to accompany sets forth the work I was able to accomplish. It does not claim to be other than purely pioneer work. I had with me a surveyor's compass and a sextant and artificial horizon. I took no observations for longitude, but obtained a few for latitude, which served as guiding points in making my map. Owing to the fact that I depended on water instead of taking mercury with me for my artificial horizon, a number of observations were lost because of the ease with which the surface of the water was disturbed and the gathering of moisture

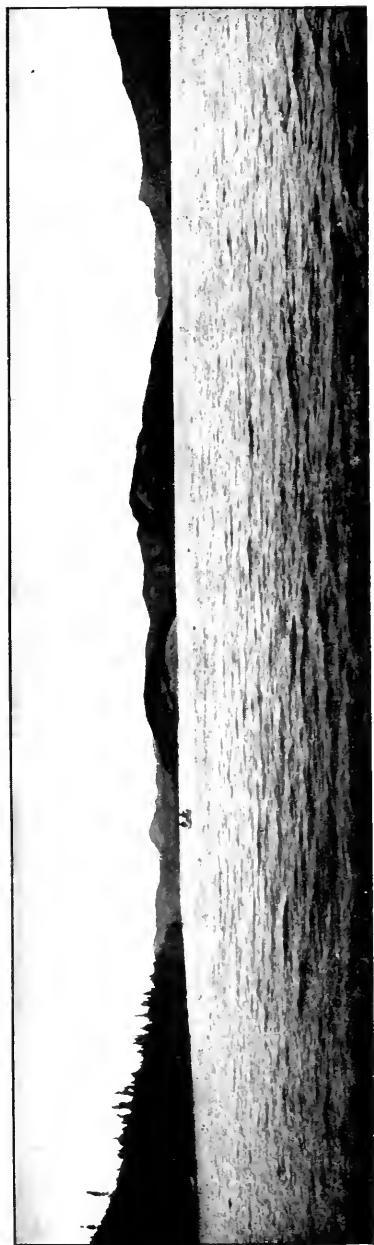
on the glass. The controlling points of the journey were already astronomically fixed.* The shores of the lake were not explored, but outlined as they appeared from the canoe or from the top of a hill.

The map of the route of the first Hubbard Expedition is from one drawn for me by George Elson, with the few observations for latitude recorded by Mr. Hubbard in his diary as guiding points. Mr. Hubbard's note-book, containing his maps and other records I have not had access to.

My expedition left North-west River Post 3-30 p.m., June 27th. I had two canoes and four guides, chief among whom was George Elson, who had loyally served Mr. Hubbard in 1903, and who had, with a rare skill and a rarer devotion, recovered Mr. Hubbard's body, his records, and his photographic material from the interior, in the depth of the following winter. My supply of provisions totalled 750 lbs., the complete outfit weighing 1,000 lbs. July 17th found us at the head of Seal Lake. August 2nd we made our first camp on Lake Michikamau. August 10th we arrived at the Height of Land, and in seventeen days made the run down the George River to the post at Ungava, arriving there at 11-20 a.m., August 27th.

The Nascaupsee River may be said to have its origin in lat. 54° 50', and W. long. 64° 30', at the edge of the Height of Land, its course from this point to the ocean describing a somewhat awkward-looking letter W. The distance in a straight line to its discharge into Lake Melville is two hundred miles, but following the windings of its course is about three hundred miles. From the Height of Land a series of lake expansions stretches nearly one hundred miles east of south, the last and largest being Lake Michikamau, of all the lakes of the interior second only to Mistassini in size. It is sixty miles long and twenty-five miles in width at its widest. The Nascaupsee River issues from the lake to the east a few miles north of lat. 54°. The outlet is partly concealed by a large

* Northwest River Post, Lake Michikamau and its outlet, and the mouth of the George River.



Mrs. Leonidas Hubbard, June.

Fig. 1. Nascoupee River, entering Seal Lake.



Mrs. Leonidas Hubbard, June.

Fig. 2. Lower Nascoupee River Sand Hills and Ice Banks.

island to the south, and the river flows from the lake round a low wooded point, breaking into rapids as it spreads about the islands in the upper end of Lake Agnes. Its course is now north-east to Seal Lake, the first fifty miles being through the great plain of the lakes, where MacKenzie and Fremont are its largest expansions.

Here a thousand lakes spread over the country, separated from Lake Michikamau by a low ridge extending northward along its eastern shore. Across the plain from east to west stretches a succession of low wooded ridges, seeming to become higher and more barren in the north. The wood growth is of small spruce and larch, unrelieved by the touch of white birch and poplar found in plenty on the lower levels, and the ridges extend eastward to the long portage and beyond, and are separated from the great irregular hills which occupy the country west of Seal Lake by a broad sand plain. To the south of the lakes the country is more rugged and barren, big rocky hills standing out towards Lake Michikamau.

At the foot of Lake Marie the river descends from the plain at Isabella Falls, a system of falls and rapids and chutes extending for more than a mile, where the water rushes over ledges, round rocky islands and through miniature Cañons, an abrupt right angle bend midway of the descent adding to the wildness and picturesque beauty of the scene. The rock, which is Laurentian, is rich red brown, almost purple in colour, and its perpendicular surfaces are patched with a close grey-green moss and a variety the colour of vermilion. Islands and shores are wooded, and the dark spruces stand out in strong relief against the white of the reindeer moss. From this point eastward to beyond our long portage which is as far as the wooded country extends, there is a perceptible difference in the size of the trees, those in the sheltered river valley attaining a larger growth than those on the plain above.

For the next seven miles the river drops rapidly. Two wild and impassible rapids occur before reaching Gertrude Falls, where the river takes a direct drop of about sixty feet, flowing

on in almost continuous rapids to the next drop at Maid Marion Falls. Here it descends fifty feet into a narrow channel cut out in the gneiss and schists of the Laurentian, emerging from the hills ten miles below to a terraced sand plain four miles wide. Beyond this it passes through the sea of hills west of Seal Lake. The main drop in this part of its course takes place in a fall of a few feet a short distance below the plain, and at Cascade and Seal Rapids, though there are a number of smaller rapids. There is a little green wood along this part of the river, the country here and around the northern part of Seal Lake having been burned over long ago. It is now grown up with poplar and white birch, from the midst of which the rocky hill-tops rise bare and stern. A few small lake expansions occur, Wachesknipi being the largest. Here the country flattens out again to low sand ridges, and the river, bending a little to the south enters Seal Lake. (See Fig. 1.)

From the northern extremity of the lake an arm, which, according to the trappers, is thirty miles long, extends away to the west. As far as we could see, the hills along its south shore drop abruptly to the river, like the Palisades of the Hudson. The course of the river is to the south, the lake contracting seven miles down to about three hundred yards in width, where perpendicular cliffs rise from the water edge and the current is very swift. The lake is surrounded by hills, the wildest and most rugged region being that about the outlet. It lies close to the edge of the plateau, and, from the point where the river leaves it, the water breaks into tossing rapids. From here to the northern extremity of Bald Mountain the river is still unexplored. According to the trappers, it rushes down a continuous rocky slope, the hills in places rising perpendicular from its edge.

Below the bend at Bald Mountain the direction of the river is south-east to Grand Lake. Its course lies mainly through sand hills and terraces, its banks varying from a few feet to sixty and eighty and one hundred feet in height. The valley is mostly well wooded with spruce and balsam as far as Mabelle

Island, and here the spruce reaches splendid size. The trees are very tall and straight, and one I measured was nine feet in circumference. Below the island the country was swept by fire twenty-five years ago, and the new growth is still quite small. Among the hills Bald Mountain and Mts. Elizabeth and Sawyer are the most prominent features, being apparently more than a thousand feet in height. From Bald Mountain the rapids are continuous to Point Lucie, below Mt. Sawyer, the heaviest being North Pole and Three Mile Rapids. The remaining seventeen miles to Grand Lake is smooth water, though the current continues swift, and the river enters the lake around a number of small wooded islands, which entirely obscure it from the lake.

Grand Lake is forty miles long and four miles wide, and is very deep. It lies south of east among the hills, the highest and most striking of these being Berry Head on the north shore, and Porcupine Hill, Cape Blanc, and Cape Corbeau on the south. From the eastern extremity of the lake a three-mile stretch of rapid river carries its waters to Lake Melville, where, together with those of the Grand or Hamilton, they pass north-east, entering the Atlantic north of the 54th parallel.

Throughout its length the Nascaupée receives tributaries of considerable size, on the upper river the principal contribution coming in from the north. Its waters are clear and cold, though some of the streams which enter it below Seal Lake are red brown water. On June 29th I found its shores at the foot of Three Mile Rapid lined with ice banks eight and ten feet thick, though above them violets were in bloom. On August 3rd we saw large masses of ice, like miniature bergs, floating in Lake Michikamau. Almost throughout the length of the river there was the border of tangled Arctic willows, which grow to a height of six and eight feet, and in many places broom birch covered its law drift islands and shores. (See Fig. 2.) On the islands of Lake Michikamau and some of its more exposed points the spruces were sometimes dwarfed and distorted by the storms; and farther north, about the Height of Land, where

the country is flat and boggy, the wood growth consists mainly of tamarack with small spruce interspersed, many of the tall, slender tops of the former being completely bent over, telling of the rigours of the climate.

Standing on a slight elevation near the Height of Land, I had the feeling of being at the summit of the world. The country seemed to fall away, especially to north and south. The line of the horizon seemed too near to be natural, and there was more than the usual realizing sense of the great space between the earth and sky. This was emphasized by the lifting of a far-distant hill-top above the line, as if in an attempt to look across the divide. (See Fig. 3.)

The middle source of the George River is in Lake Hubbard, immediately north of the Height of Land, so that it may be accounted to take its rise in practically the same latitude and the same longitude as the Nascaupée. Its course is west of north, and for more than fifty miles it consists of a series of lake expansions of varying sizes, whose waters drop from one to another down shallow rapids. About the lakes the country is quite flat, low ridges beginning to appear as we passed northward. Five miles below Cabot Lake the east branch of the upper George comes in, a stream apparently almost equalling the middle river in volume, and twelve miles farther down the west branch, which drains Attikamagen Lake near the Height of Land to the south-west. Ten miles beyond Resolution Lake the river drops down through three rocky gorges at Cañon Camp, the lake expansions of the upper country are left behind, and the George River now flows with strong, swift current in a distinct valley. From a few miles below the camp the country is burned over, and is exceedingly desolate, the hills being barren even of reindeer moss. These hills become higher, till below Thousand Island Expansion they rise between six hundred and seven hundred feet above the river.

The river here flows for about two miles in falls and heavy rapids round islands of pink-and-white rock, beyond which the descent is less precipitate. In the next six miles two heavy rapids occur, at the second of which the river descends to flow

between high sand banks, the hills standing back some distance from its shores, their broken faces red with a coating of iron rust. The intervening spaces are strewn with boulders of unusual size. Some miles below a large tributary comes in from the west, the river turns abruptly northward among the higher hills and spreads to the Barren Ground Water.

This expansion is somewhat more than fifty miles in length and from one to two wide. It is shut in on either side by high hills, which in places on the east shore rise abruptly from the water edge, but on the west usually stand a little back from the lake, the intervening spaces being filled in with sand. Long, high, wedge-shaped points of sand and loose rock reach out here and there from the west shore, which in places slopes back to the hills in high terraces, the highest more than one hundred and fifty feet above the lake. Streams fall in from either shore at short intervals, but throughout the length of the river by far the larger contribution comes in from the east.

From the foot of the lake the George begins a swift descent to Ungava, flowing for more than one hundred and thirty miles in almost continuous rapids. The slope of the river-bed is in many places like that of a steep grade: and as the water swings past the long points of loose rocks which reach out from either shore, there is not only the slope down the course of the river, but a distinct tilt from one side to the other, as when an engine rounds a bend. There are foaming breakers where the water flows over its boulder shallows; but again the river is so smooth as to seem motionless, even where the slope downward is distinctly perceptible. A few small expansions occur where the hills stand further apart, and in places serpent-like sand ridges reach in from the hills on the west. River terraces occur, those opposite Pyramid Mountain being particularly well marked. One of the most characteristic features of the lower river is the great wall of packed boulders thrown up by the action of the ice during the spring floods. Some of the rocks are of immense size, and usually the largest of them are found at the top. The wall varies in height from twenty feet at its beginning, thirty

miles below the Barren Ground Water, to fifty and sixty feet farther down: and a short distance below our camp of August 24th a long bank of ice from three to four feet in thickness was still clinging to the boulders half way up from the water. (See Fig. 4.)

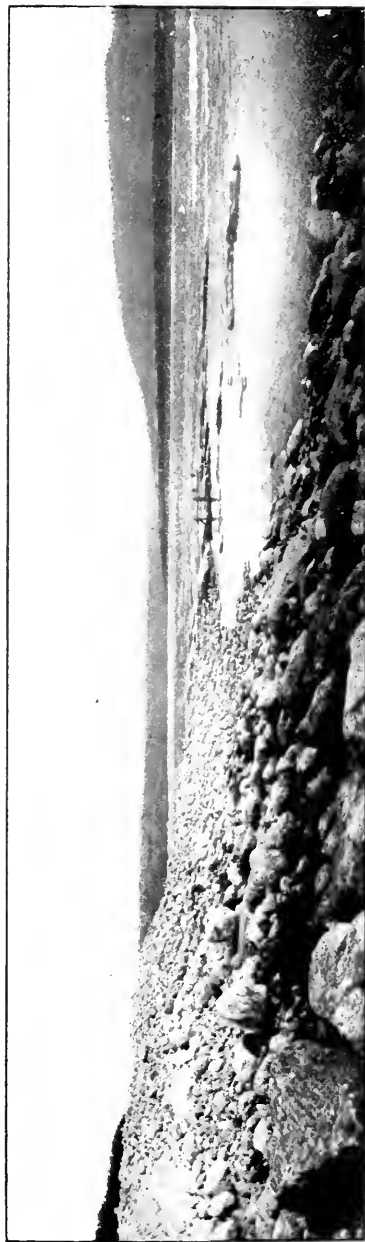
The country becomes more and more mountainous and rugged and barren. The wood growth, which is of spruce and larch, with at intervals, a little balsam, is for some distance below Barren Ground Water, rather more luxuriant than along the lake shores. At best it is but a narrow belt along the water, covering the hill sides to a height of perhaps 200 feet, and dwindling gradually towards the north till in places it is absent altogether. The ridges on either side cross each other almost at right angles, turning the river now to the north-east, again to the north-west. Down the mountain sides broad bands of white show where the waters of numberless lakes and streams on the heights come tumbling down to join the river, and again a great gap in the solid mountain of rock lets through a rush of blue-green foaming water. The mountains on the right bank seem more rugged and irregular than those on the left, and Bridgman Mountains stand out to the river quite distinct and separate, like giant forts. The hills have the characteristic Cambrian outline; and it is the opinion of Mr. Low that this formation extends continuously eastwards from the Kaniapiskau to the George.

Below Helen Falls the mountains spread in a wider sweep to the sea and the river gradually increases in width to its discharge into Ungava. Two heavy rapids occur below the limit of tidal influence which are obliterated at high water. At the foot of the lower of these there is forty feet of tide at the spring. In The Narrows beyond the post the outgoing water rushes in a long, smooth curve over an enormous boulder lying near the centre of the stream, to curl back in a great breaker the roar of which can be heard for miles. Ungava Bay has a spring tide of fifty feet, which at its rise fills the coves till below The Narrows the river is in places seven miles in width.



Mrs. Leonidas Hubbard, June.

Fig. 3. Mountain Top View of the Plateau.



Mrs. Leonidas Hubbard, June.

Fig. 4. Lower George River—River Wall of Loose Rock (50 ft. high).

The game supply of the country traversed we did not find abundant, though it should be said no hunting was done off the route followed. On the lower Nascaupée our take consisted of a few porcupines, rabbits, partridges, and musk-rats. There were signs of beaver, marten, and otter, many bear trails, though we saw but one bear, a black one, and only once on the lower river did we see fresh caribou tracks. Seals played at the foot of Three Mile Rapid, and later we saw a number of them in Seal Lake and above Seal Rapid. On the upper river a few black ducks, Canada geese, spruce partridges, willow ptarmigan, were taken, and two days' journey above Seal Lake our first caribou.

On the west shore of Lake Michikamau, August 8th, we came upon the caribou migration, and saw one herd in which there were thousands. Though we did not again find them in such numbers, yet for fifty miles of our journey they were seen in smaller herds every day, and sometimes many times a day. They were in summer dress of pretty brown shading to grey and white on the under parts. The antlers were in velvet and of immense size, and males and females were already herding together. Apparently they had been in occupation of the country for some time. From Ptarmigan Point, on Lake Michikamau, to the head of Long Lake, on the George River, the country was a net work of their trails, in the woodlands and bogs cut deep into the soil, on the barren hillsides broad, dark bands converging to the crossing-place at the river. North of the Height of Land we passed at intervals long piles of whitened antlers and along the shore opposite our camp of August 15th, a broad band of white caribou hair, four feet above the river, told of their crossing and recrossing while shedding the winter coats.

Only once in passing this part of the country did we find trace of their enemy the wolf. Throughout the journey we did not see any, but once, while running down the lower George River, a lonely cry came down to us from one high up on the mountain side.

Through the caribou belt other game was more abundant also. Every day mother ducks with their flocks of little ones were seen, and a number of geese were taken. Gulls and loons were there in numbers, and ptarmigan were very plentiful as far as the head of the Barren Ground Water; but beyond, none were taken till we reached the post. Along the lower part of each of the rivers signs of foxes in large numbers were found, and the lemmings on which they feed made us not a little trouble. They were about in thousands, and the ground was so perforated with their holes as to remind one of a porous plaster.

In the lakes fish seem abundant, though we travelled too fast to do much fishing, and the nets were not once in the water. In the lakes are the brook trout, ouananiche, and namaycush, some white fish, and in the lower George the sea trout and salmon.

The flowers are beautiful, though not so varied as in the home country. All along the Nascupsee blossoms of the Labrador tea filled the air with their fragrance, and pale laurel grew in abundance. Now and then we crossed great beds of blossoming cloudberry, and everywhere the star flower and bunchberry showed their white blossoms. One day, while ascending the Wapustan River, Gilbert handed me a dandelion, and during the day I saw several of them, but did not again find them throughout the journey. On the upper Nascupsee the dainty pink bells of the low cranberry showed in the carpet of glossy green, and near the water, along the low drift shores, the pink, almost rose-like, blossom of the dewberry. Violets grew on both rivers, but most beautiful of all was the twin flower, which I first found growing on the sandy terraces beyond the hill country west of Seal Lake. It was the delightful fragrance which first attracted my attention, and, looking down, I saw the long trailing vines from which the pink twin bells are lifted on slender, hair-like stems. It grows even more abundantly on the shores of the George River, and at the post of Ungava masses of this beautiful flower, so rare and treasured

here, creep along the foot of the mountain, while indoors, in a pot on the windowsill, Mrs. Ford, the agent's wife carefully treasures two tiny clover plants, in her eagerness almost afraid to believe that are really clover.

During the journey, which occupied the two months from June 27th to August 27th the weather was wonderfully fine. There was not the continued downpour of rain nor any of the extreme heat which told so heavily against Mr. Hubbard in 1903. We were in camp only eleven days on account of the rain, and the highest temperature was 77°F . in the shade. The lowest recorded temperature was 30°F . which was not, however, the minimum reached. As we passed into the higher lake country the clear nights were frosty, and on the morning of August 10th, at the northern extremity of Lake Michikamau, there was a coating of ice $\frac{1}{8}$ inch thick on a basin of water left outside the tent over-night. While descending the upper George my duffle was sometimes frozen stiff when I came to put it on in the morning; and on August 13th, 14th, and 15th we had snow flurries, as well as heavy rain and wind.

Thunderstorms were rare, and very mild as compared with those in the United States. On many days which were very beautiful there were passing showers, and Labrador is a Land of Rainbows. Nowhere have I ever seen the colours so brilliant or so variedly manifested. They did not always appear in the form of a bow, and once I saw them lie like a beautiful veil along the whole length of Rainbow Hill on the upper Nascaupsee. There was a wonderful clearness in the atmosphere, which made landmarks miles away seem very near, and clothed the far-distant hills with colour indescribably beautiful. In the blue of the hills and the waters and the sky there was a peculiar silveriness, which, with the white of the reindeer moss and the dark green of the spruce forest, touched in places with the tender green of the white birch and poplar, made a combination of colour which I think can scarcely be surpassed in beauty anywhere in the world. In a way which I could neither describe nor understand, it was comforting.

The flies and mosquitoes, for which the country is famed, did not wholly fail of accomplishing their dire designs upon us; but their ravages are easily forgotten in the remembrance of the beauties of that lone land which can smile with so much grace, even though its mood has sometimes been one of such persistent cruelty.

AN EXPLORATION OF THE NUN KUN MOUNTAIN GROUP AND ITS GLACIERS.

By WILLIAM HUNTER WORKMAN, M.A., M.D., F.R.G.S.

(Addressed to the Society in the Geographical Hall on Tuesday, December 3rd, 1907.)*

THE Nun Kun mountain group is situated in Suru, Kashmir, between $33^{\circ} 55'$ and $34^{\circ} 6'$ lat. N., and $76^{\circ} 2'$ and $76^{\circ} 13'$ long. E. The massif to which this name is applied is comparatively small and compact, standing by itself in the midst of a network of mountains, occupying practically a square with a side of 11 miles. Two parallel spurs of the same fold, connected with the Nun Kun by narrow ridges, extend west to $75^{\circ} 53'$ long. E., enclosing a glacier eight miles long. If the mountains forming the farther barriers of the glaciers of the group be included, the area would be considerably greater.

The highest central portion is guarded on all sides by a multitude of ragged precipitous spurs or buttresses, which run down from it to the surrounding valleys, the walls of which they help to form. On the north they overhang the Suru river in the Rangdum valley, where for eight miles, with the opposite mountains, they enclose a gorge through which it flows. The summits of these external buttresses are mostly pointed or serrated, and attain heights of 18,000 to 20,000 feet.

The central part of the massif rises 2,000 to 4,000 feet, not only above its own lesser peaks, but above all others for scores of miles around, the nearest peak that exceeds it in height being Nanga Parbat, 120 miles north-west. East, west, and south, none of the vast multitude of mountains which it overlooks approach it in height. It stands alone, an elevated island of rock and ice, towering bold and sharp from an ocean of

* We are indebted to the Royal Geographical Society for permission to print this paper with the map.

surrounding peaks. Although situated in a fairly well-known region, the valleys around it having for years been visited by sportsmen and somewhat by travellers, its height and its inaccessibility have rendered its upper parts hitherto secure from intrusion.

Sportsmen have occasionally entered the Shafat nala, the easiest avenue of approach, one having camped for some days in 1905 at the site of our base camp, four miles above the tongue of the Shafat glacier. In 1902 the Rev. C. E. Barton and Dr. A. Neve paid it a brief visit. They camped for a night near the same point, at an altitude of 14,900 feet, and the next day went up the Shafat glacier to a height estimated by them at about 18,000 feet, returning to the lower camp the same day. In 1903, Mr. Sillem, a Dutch traveller, visited the Shafat glacier. He is reported by Dr. Neve to have reached a height on it of 21,000 feet, but what he is said to have seen is rather indefinitely stated, and does not correspond to the topographical features at that height.

The object of the expedition of Mrs. F. Bullock Workman and myself in 1906 was the more thorough exploration of this region, particularly of the upper unvisited portions. The chief village of the several composing what is called Suru, on the Suru river, three marches south of Kargil on the Leh route, and twelve from Srinagar, was selected as our base, this being the nearest village with a lambardar to the Nun Kun. The crops having failed the two preceding seasons in Suru and Ladakh, no supplies were obtainable there, so we were obliged to forward from Srinagar not only supplies for our party, but also some 16,000 lbs. of grain for our coolies, to transport which required 243 coolies and 60 ponies. On June 24 we reached Suru, accompanied by the guide, Cyprien Savoye, six Italian porters, and five servants.

Just south of Suru, the Suru valley, which up to this point runs south from Kargil, makes a wide bend around the extremity of a high spur, and from Purkutse, the last village where any cultivation is seen, stretches east for 23 miles, under

the name of the Upper Suru or Rangdum valley. It resembles Ladakh valleys, being mostly desert with some scanty vegetation. It cannot boast of a single tree, but the swamp land along the river is covered with bush-growth from 2 to 6 feet high. For eight miles from Purkutse it consists of a gorge just wide enough for the passage of the here turbulent Suru river, directly over which, on the south, rise the frowning spires of the Nun Kun massif, 11,500 feet above, sending down a number of short glaciers, which do not reach the valley-bed, and a larger one, the Ganri, later to be described. It then opens out with an average width of about one mile to its end, where it expands into an amphitheatre, into which four valleys open.

On July 3rd we reached Gulmatunga, one march above Purkutse, the site of a deserted village, on the north side of the unbridged Suru river, opposite which the Shafat nala, which was our first objective, enters the Rangdum. To reach this it was necessary to cross the river, which early in July is usually fordable at this point, but we found the water so high that the only way to get over was by swimming, as impossible a feat for our loaded caravan as flying would have been. The weather during the latter half of June had been fine and unusually warm. Since leaving Dras, at elevations from 10,000 to 12,000 feet, we had marched in such sun-maxima as 191° , 199° , 203° , 196° , 200° , 206° , 204.5° , and 205° Fahr. The great heat had melted the snow on the glaciers rapidly, and we had found all glacier-fed streams on our route greatly swollen and turbid, some of them being impassable after twelve o'clock. The Suru river was no exception. Its volume was much increased, and its mud-laden water of a dark slate colour. We camped, hoping to get across early in the morning, but the water did not fall sufficiently to make the river fordable. We were therefore obliged to follow it up for 16 miles to the hamlet of Tazi Tonzas, where it divides into several branches. Here, between 8 and 10 a.m., we made the passage of five small branches, and of the 200-feet-wide main branch, though the

water of the last was waist-high and flowing with a rapid current, besides being ice-cold, so that the men had to wade through it in squads, holding on to one another for security. We then descended the valley again, through swamps and over boulder-strewn tali, till the Shafat nala was reached after four days of extra marching.

The Shafat nala runs from the Rangdum valley, a little west of south, straight away along the eastern edge of the Nun Kun for 9 miles to the base of an impressive snow mountain marked Z1 on the Indian Survey map, seen through the nala from Gulmatunga towering above its upper end. The nala is enclosed on both sides by precipitous mountain walls. For some distance above its mouth its bed consists of rolling hillocks, sparsely covered with vegetation. A large colony of marmots had appropriated these as a site for a subterranean city, and their burrows pierced the ground at short intervals in all directions. These marmots were evidently social in their habits, and exchanged frequent visits, as was shown by footpaths as distinct and well-trodden as those made by man, running between the different burrows and forming a network over the whole surface. Were this place of sufficient importance to have a name, it might appropriately be called Marmotville. Beyond this for two miles the nala ascends gently in swampy meadows covered with grass and bushes resembling dwarf-willows, interspersed with stony reaches, and intersected by numerous swiftly-flowing streams.

About three miles above the lower end of the nala the tongue of the Shafat glacier is met with, an irregular mass of ice stretching entirely across the nala, from 80 to 100 feet high, heavily covered with red granite detritus, which gives it the appearance of a large terminal moraine. The valley bed immediately in front of it, though somewhat strewn with small stones, has no terminal moraines to indicate that, in recent times, the glacier has extended lower down than at present, to which fact the grass-covered alluvium existing almost at the edge of the tongue also testifies. Two good-sized streams issue,

one on each side of the tongue, from deep gullies extending half a mile or more up the glacier. For the next two miles the glacier consists of a chaotic combination of high ridges, deep ravines with perpendicular walls, hillocks, and depressions, forming a labyrinth as difficult to traverse as could well be found. This part has no well-marked moraines, either lateral or median, though it is covered with an enormous amount of detritus. Its banks on both sides consist of steep mountain slopes greatly torn and eroded by ice and water.

The upper end of this portion ceases abruptly with a sharp sweep to the south-west, below which a lower surface of smooth white ice about half a mile wide begins, occupying the eastern side of the nala, and extending to the base of Z1, four miles distant. This had few crevasses, but it was covered with small pockets, filled with crystal water, from a few inches to 2 feet in diameter, and from 6 inches to 2 feet deep, at the bottom of which lay either flat stones or a thin layer of silt, which, by absorbing and transmitting the heat of the sun, had caused the ice beneath them to melt and form the pockets. Near the junction of the white ice with the lower portion were a number of glacial tables, some of them of large size, supported on ice pedestals from 3 to 6 feet high.

Adjoining the white ice on the west, but entirely distinct from it both in character and origin, though equally a part of the glacier, runs another section parallel with and overtopping the white one by 60 to 80 feet. This section, about a quarter of a mile wide, fills the remainder of the glacial bed. It is greatly broken and crevassed, and thickly covered with reddish granite detritus. The final destination of this section affords an interesting example of the application of glacial force. On its west side, about 1 mile above the lower end of the white section, a branch glacier enters. This branch is short, not over $2\frac{1}{2}$ miles in length, and perhaps half a mile wide, but, coming down from the sides of two peaks, one of them of over 23,000 feet, with a fall of 9,000 feet, it presses with tremendous force upon the Shafat glacier. As a result, the red section is

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crowded bodily over to the east side of the glacial bed, cutting across the white section, forming a barrier to its further progress, and literally swallowing it up. The red portion then expands so as to fill the whole glacial bed, three-quarters of a mile wide, and forms the chaotic lowest two miles of the glacier already described.

The very abundant detritus brought down by the branch glacier is black. This crowds with the ice of the branch into the space from which the red section has been pushed, and can be traced downward for about a mile. Opposite the point of entrance a large hillock of black material presses well into the red section, rising high above the surrounding level. The eastern edge of the white section bears along a smaller black moraine, which is also swallowed up by the red portion at their point of contact.

Opposite Z1 the Shafat glacier, which to this point ascends with a moderate gradient south 23° W., turns around the end of a spur from the Nun Kun, and pursues a course west 10° S. to a ridge three miles above, descending from the central one of the row of five southern Nun Kun peaks across the slope to meet an arête projecting from Z1. This ridge rises only slightly above the glacial surface, but it forms a line of demarcation, on the north side, between the snows, which, coming from three of the Nun Kun peaks, feed the Shafat glacier, and those from the remaining two which fall to the Fariabad nala: and on the south, between those from the whole front of Z1, and those from it west of the arête, which also fall to the Fariabad nala. The altitude of this ridge at a quarter of a mile from the wall of Z1 is 16,911 feet. Thence it rises continuously till it ends in a peak of over 21,000 feet.

The reservoir of the Shafat glacier differs from those of the ordinary type, in that it is composed of two lateral parts or wings, over two miles distant from each other, the northern wing consisting of the slopes of the Nun Kun massif, and the southern of those of Z1, the snows from both of which descend east of the boundary ridge into the intermediate depression.

meeting near its middle line to form the glacier. The glacier is therefore destitute of a typical head or end basin enclosed by mountains on the west.

Its width just above the bend is about a mile, but below the ridge it widens to more than two miles, ascending sharply and greatly broken to the Nun Kun. The ice from the south or Z 1 wing is remarkably free from detritus, but that from the Nun Kun wing bears a considerable quantity in detached masses, which finally becomes concentrated in the red western section already described.

The glacier coming from the two remaining southern Nun Kun peaks, named by us the Fariabad glacier, descends from north to south across the upper end of and at right angles to the Shafat, contributing to the latter a small amount of ice through an opening in the dividing ridge near its centre.

We established a base camp on the spur around which the glacier turns, about 400 feet above the latter at an altitude of 15,100 feet. It commanded a view of a second tributary entering the Shafat from the east in an impressive ice-fall, and of the steep front of the splendid peak Z 1, over 22,000 feet in height, clad in a shaggy mail of ice, portions of which every now and again broke away and plunged down to the glacier in resounding avalanches. After the Nun Kun massif Z 1 is the highest and most imposing mountain in the region.

While wood and supplies were being collected at this camp, we made reconnaissances of the ice-fall opposite, ascending the lower half of it, and of the higher parts of the Shafat glacier on both sides to heights of about 18,000 feet, from which an excellent idea of the glacier and its basin was obtained; but from no point could we see the conformation of the highest portion of the Nun Kun massif lying behind the five southern peaks crowning the wall above, nor could the relation of the highest western peak to its neighbours be determined, nor were the two northern peaks next in altitude to the highest visible, except the very apex of the north-easterly one from the ice-fall under Z 1.

Large portions of the *névé*-covered surface of the Shafat glacier, from 16,000 to 18,500 feet, were thickly strewn with *nieves penitentes*. This was the first time we had met with them in five seasons of Himalayan exploration, and I am not aware that their existence in Himalaya has been mentioned by any other observer. For a time they were regarded as peculiar to the Andes, having been observed only by explorers of that chain, until Hans Meyer, and after him C. Uhlig, discovered them on Kilimandjaro. In the Andes they have been found from the equator to $35^{\circ} 4'$ lat. S., while those seen by us existed from $33^{\circ} 57'$ to $33^{\circ} 59'$ lat. N.

They varied in height from 8 inches to 3 feet, and had the shape of wedges or pyramids flattened at the sides with curling fluted crests, all turned in the same direction.

They were arranged in parallel lines running diagonally to the axis of the glacier, the long diameter of each *nieve* being parallel to the long diameters of others in the system and coincident with the direction of the lines. They were composed of granular snow, hard frozen in the morning, but softening more or less under the heat of the sun. No ice was found in them. The central portion of each, even when softened by the sun, was much denser than the outer surface or the surrounding *névé*, offering even in the smallest decided resistance to the thrust of an ice-axe, while the two latter could often be scraped away with the fingers. The *névé* on which they stood sloped at angles of 30° to 40° .

As this was the only one of many Himalayan glaciers we have explored presenting this phenomenon, attention was directed to the conditions obtaining on it as furnishing a clue to the mode of formation of the *nieves*. As already stated, this glacier is peculiar in that it is acephalous, being entirely open at its upper western end and fully exposed to the prevailing west winds, which sweep down its course with considerable force even in fair weather, and during storms must attain a high velocity. Another important condition not seen by us on other glaciers was the long-continued fine weather. During

our Baltistan expeditions fine weather was the exception, almost daily snowstorms being the rule; but here, from early in June till our departure on August 9, the weather was continuously pleasant, only one slight squall being noted. In ascending the glacier, and on the mountains above, even to over 21,000 feet, no new snow was met with. To these two conditions the formation of the *nieves penitentes* here seen may be referred.

It is a matter of common observation that, when any object lies upon a glacier which protects the snow or ice beneath it from the sun's heat, or a condition exists that offers resistance to the same, the surrounding surface melts away, leaving an elevation of snow or ice in such place. When a rock rests on a glacier, a glacial table supported on an ice pedestal may result. Ice pyramids are sometimes seen capped with mud or fine detritus. When a portion of a glacial surface becomes more dense than that around it, the softer portions melt away, leaving the denser standing as an upward projection.

This premised, the development of these *nieves* may be read as follows:—During the winter and spring storms the wind, sweeping down the glacier, drifted the loose snow into waves and ridges. These, particularly the latter, were formed parallel to one another, with a direction more or less transverse to the axis of the glacier. The force of the wind packed the snow composing the ridges, so that it became much denser than that in the hollows between them. Wind is the only natural force conceivable that could have caused ridges and wavy condensations of snow in the positions occupied by the *nieves*, upon fairly smooth slopes not exposed to avalanches and above the line of rain. This action of the wind being granted, it follows that the formation of waves and ridges of condensed snow was the first step in the process of development.

Then came the prolonged period of fine weather, when no new snow fell to cover the roughened glacial surface, when the latter was exposed during the long days of June and July to the full action of the sun, burning with a heat of 170° to

206 Fahr. and over. As melting proceeded the softer snow of the hollows yielded to a greater degree than the harder snow of the ridges, thus accentuating the difference of level between the two, and the ridges themselves were sculptured out, the densest and most resistant parts remaining as apices, till, finally, the flattened pyramids known as *nieves penitentes* were fully formed.

The fact that the discrete pyramids, many of them with the ends of their elongated bases touching the similar ends of adjacent ones, stood in lines parallel to other lines, indicates (1) that they were formed out of pre-existing ridges or linear wavelets, and (2) that the condensation of snow in the ridges was not equally great at all points, but occurred in foci, the crests of which were a little distance apart, each crest, as melting proceeded, forming the apex of a *nieve*.

The glacier falls from west to east, east 10° N., and the line of union of its north and south slopes corresponds with its axis. The direction of the longer diameters of the *nieves* and of the lines of which they formed a part was on the north slopes, east 20° S., whilst that of those on the south slopes was north 45° E. The former cut the glacial axis at an angle of 30° , and the latter at one of 35° . The linear rows of *nieves* on the two slopes were thus inclined to one another at an angle of 65° . From this it appears that the direction of the primary ridges was determined by the direction of the slopes on which they were formed, the wind remaining constant to both. The apices of the *nieves* on both slopes curved over more or less, giving the pyramids a convex contour on one face and a concave one on the opposite. These, as well as the overhanging hoods, with which many of them were crowned, all pointed in the same direction, *i.e.*, towards the east, down the glacier, away from the prevailing west wind, which never varied during the three weeks we were on this glacier. Both the curving apices and the hoods were probably due to the cornices formed by the wind along the crests of the primary ridges, which, being denser, offered greater resistance to the sun's heat than the

snow immediately under them, and persisted as overhanging parts of the nieve. It may be noted that nieves were found only above the line where freezing occurs at night, *i.e.*, above 16,000 feet, which circumstance may be a contributory factor to their development or modelling.

From the foregoing, the conclusion may be drawn that the formation of *nieves penitentes*, certainly of such as were here seen, depends on two conditions: (1) the existence of a strong wind blowing constantly from the same direction, driving the snow into wavelets and ridges usually parallel to one another, and condensing it into compact masses of foci a little removed from one another; and (2) a prolonged period of fine weather following, during which the softer portions are melted away by the sun's heat, both direct and reflected, leaving the denser parts standing in the well-known shapes. In stormy seasons the ridges, after being formed, would be protected from the sun's action by new snow under which they would be buried, and no nieves would be developed.

Six miles west of the upper end of the Shafat glacier stands a hitherto unnamed summit of 19,080 feet, called by us Mount Nieves Penitentes, and two miles north of it another of 20,571 feet, D 41. First ascents of both of these were made by us. The last 300 feet in altitude of the rounded top of the former as well as others of its upper surfaces were thickly covered with *nieves penitentes* of the same character as, but larger than, those on the Shafat glacier. Above 19,000 feet the final slants of D 41 rise at angles of 60° to 70°. These, facing south, but fully exposed to the west wind, bristled in every part quite to the summit, with nieves rising one above another in unbroken succession. These were the largest of all, rose from an ice basis, and themselves consisted of ice. In connection with the statement of Prof. Hauthal, that *nieves penitentes* in the Andes occur exclusively in sheltered places, it is interesting to note that those observed by us at three different points in Himalaya occurred on surfaces fully exposed to wind, that the higher and more exposed the surface the larger were the nieves, and that

the largest, most perfectly developed, and apparently the most durable of all, were found at the highest altitude, from 19,000 to 20,571 feet, where the wind would naturally be the strongest. On the Barmal glacier, springing from the two last-mentioned peaks and a wall connecting them and protected by precipitous mountains, and in the Nun Kun basin at an altitude of 21,000 feet, covered with snow and also much enclosed, no nieves were seen. Sir Martin Conway, from his observations of *nieves penitentes* on Aconcagua (see "Aconcagua and Terra del Fuego") concludes they are carved by solar radiation out of old avalanche beds, wind having nothing to do with their origin. Nieves formed in this manner would be found only on circumscribed areas in positions, which avalanche beds might occupy, and not widely distributed over glacial surface and on mountain sides and tops, as in case of those seen by us, where there could be no question of avalanche beds. The conditions under which nieves have been observed have evidently differed somewhat in different places.

Prof. Hauthal also regards the sun as the sole agent in the formation of nieves. This hypothesis fails to explain satisfactorily the parallelism of the lines in which the nieves stand, as well as the implied selective power of the sun in melting away some portions of a glacial surface and leaving others intact, both of which can be accounted for by the known action of wind in causing parallel wavelets and ridges and condensing the snow in them.

Gussfeldt, one of the early observers of Andean nieves, is one of the few who recognize the agency of wind in the first stage of their development, but he does not mention the causation by it of foci of condensation that offer resistance to the sun's heat, which I regard as an essential factor in the process.

While the conclusions above stated appear to me to be the only ones consistent with existing conditions that will explain the formation of the nieves observed by me, I am quite willing

to grant that condensation of snow in foci may, in certain cases, be caused by other agents than wind.

The experience of four previous expeditions having demonstrated that coolies cannot be depended on to go much above points where rocks exist for shelter at night and water is to be had, the plan was adopted, with a view to exploring the higher parts of the Nun Kun, of taking out trained European porters to carry light camp outfit to altitudes above those which can be reached by coolies. Six porters besides the guide, who also agreed to carry a load when necessary, were judged sufficient for our purpose, and this number had accordingly been brought with us.

A reconnaissance disclosed a rock promontory projecting into the ice about 2,500 feet above our base camp, with scree beneath it, where coolies could pass the night; and about 2,200 feet above that, among the ice-falls at the base of a snow-needle, a small sloping snow plateau, which the coolies, by starting early from their night bivouac, could reach in time to return to the latter the same day. This was the highest point at which they would be available. Basing our plan of attack on the upper portion of the massif on the existence of these two *pieds à terre*, a good supply of wood and food was forwarded to the promontory, and two days later four porters with coolies were sent ahead with their own and our extra outfit, with orders to remain overnight at the promontory, move up next morning with the coolies to the plateau, and make a second camp there, sending the coolies back to us. From here they were to push on and establish a third camp with extra Mummery tents at the highest available point, and then return to and await us at the second camp.

On July 25, Mrs. Bullock Workman, myself, Savoye, and two porters, with fifteen coolies, followed, climbing at first over great moraine masses, and later over tumbled and crevassed slopes of ice and snow lying between the giant rock-ribs descending from the peaks above. We saw many *nieves penitentes*, some of them of large size. We camped on snow

just above the base of the promontory at an elevation of 17,657 feet. The minimum night temperature was 17° Fahr. The next morning we continued on up still wilder ice-slopes, steep and fatiguing, greatly broken, and seamed with wide blue chasms lined with icicles, to the second camp, where the four porters were waiting. This camp stood at 19,900 feet on a small sloping surface at the base of a ragged wall, from which at intervals great icicles were broken away by the wind and hurled down in dangerous proximity to the tents. Two hundred feet distant below the camp a wide bergschrund yawned. The coolies marched well to this point, though some of them were sick at the last, and nearly all complained of headache. They were allowed to return to the lower camp on arrival. The minimum temperature here was also 17° Fahr. On our return it was 10° Fahr. The wind blew down upon us in strong gusts the whole night, shaking the tents so that we feared we should be carried down into the bergschrund. This, with the altitude, the effect of which all felt decidedly, effectually prevented sleep.

From here the whole party of nine started upward together. The only possible route led up the steep face of the ice-wall, and above it involved the traverse of a long, sharply-inclined, curving ice-slope covered with snow. Had the passage of our caravan started an avalanche, as we feared might occur, we should have been carried down over the wall into an abyss of unknown depth running along its whole base. Two weeks later, when the snow had melted or become converted into ice, this slope would have been too dangerous to attempt. Its top lies at an altitude of about 21,000 feet, at the base of a beautiful snow-needle some 800 feet higher, which crowns the extremity of a short arête projecting from the highest Nun Kun peak. Up to this point we had seen nothing of the massif except the slopes facing the Shafat glacier. On reaching the crest we found we were standing, not on a col between the first and second of a line of peaks, as the Survey map and previous statements had led us to expect, but just above the brow of a

glacier emerging from a great oblong snow-plateau or basin, about 3 by $1\frac{1}{2}$ miles, enclosed by six great and one smaller peak, the highest of which, 23,447 feet, rises up by itself steeply from the plateau unconnected by cols with any of the others. Descending into this basin, we reached the third snow camp, which had been established at an altitude of 20,632 feet. The minimum temperature here was 4 Fahr.

Reconnaissance from this and the preceding camp showed the ascent of the highest peak to be impracticable from this plateau, certainly for our party, as it could be assailed only at one point, above which it would be necessary to camp, the arêtes leading to which are so steep that no loaded porter could possibly surmount them, and, if passable at all, would tax the powers of an unloaded expert to the utmost. We therefore moved the camp the next morning three miles further to the upper end of the plateau, at the base of the peak next in height, which promised better conditions. Here our fourth camp was pitched at an altitude of 21,300 feet. The porters could only bring half the necessary kit at one time, so they and the guide descended to the third camp for the rest, intending to return that afternoon. But a dense mist after midday and the softening of the snow by the great heat prevented their return, so that Mrs. Bullock Workman and myself were left to pass the night alone in the almost terrifying silence and loneliness of this untrodden solitude of snow.

We did not sleep. As I have found before under similar circumstances, the absolute silence that reigned during the watches of the night, in the absence of sleep, proved almost as nerve-wearing as an excess of noise. In such a situation one has the feeling of having completely lost touch with the material world, and the imagination, uncontrolled by the suggestions of ordinary sounds runs riot among fancies and possibilities neither wholly pleasing nor reassuring.

The afternoon was windless and oppressively hot. The sun shone through the drifting mist with a sickly light, but with a heat that sent the mercury in the solar thermometer to 193

Fahr. at two o'clock, and to 142° Fahr. at 3.30 o'clock. The heat was equally unbearable within and without the tents, and all the harder to endure because of the mist, which, while shutting out all view of the world around, shut in the heat, so that it became a palpable entity penetrating to every part of the system with depressing effect. At sunset the temperature fell to freezing, and an hour later to 10° Fahr., reaching a minimum of -4° before morning, a difference of 197° .

At daylight, Savoye and two porters arrived, their faces blue with cold and their moustaches covered with ice. Having drawn on our frozen boots, we set out with them to ascend the steep ice-covered flank of the mountain above, its lower half broken into ice-falls, where almost every step had to be cut. At an altitude of 22,720 feet, as the mists which almost daily obscured the mountain tops towards noon were gathering, I stopped with one porter to photograph, while the latter were yet visible, and Mrs. Bullock Workman went on with the other two to complete the ascent, attaining an altitude of 23,300 feet. Camp was reached at 7 p.m. The temperature fell that night to -6° Fahr.

I have stated the altitude of our highest camp at 21,300 feet. This was measured by hypsometric readings compared with simultaneous ones at the lower Government stations of Dras, 34 miles distant, where readings were taken for us three times daily during our absence. The same readings, calculated by Airy's table, make its altitude 21,600 feet. The variation being so great, and Airy's table differing from others in placing sea-level at 31 inches and giving relatively higher altitudes for very low pressures, the results of calculations by it have not been used. If Airy's table can claim greater accuracy than the older tables, then the altitude in question must be regarded as 21,600 feet. In either case this camp is of importance practically, as I hope presently to show, as representing, I believe, the highest point to which, up to date, November, 1907, tents have been taken and occupied, and the highest measured point at which mountaineers have passed the night. Two parties

have recently claimed to have bivouacked in the open without tents at greater altitudes. Mr. Reginald Rankin on his descent from Aconcagua being overtaken by darkness at an elevation he states as 22,000 feet, and Dr. Longstaff, with guide and porter, under similar circumstances, having spent a night in the snow at what he "thinks" was 23,000 feet. From their published accounts it appears that in neither case was the altitude mentioned determined by any kind of measurement.

It has been asserted several times within the past year that Mr. W. H. Johnson, in the employ of the Indian Survey camped in 1865 in the Kiún Lún at an altitude of 22,000 feet. I have been unable to find, in Mr. Johnson's account of his work in the "Synoptical," Vol. 7, of the Indian Survey, and in the *Journal* of the Royal Geographical Society, any mention of such a camp. If any camp, which Mr. Johnson thought approached this altitude, was made, it must have been on the peak E 61, the only peak in the region exceeding 22,000 feet, which was measured in 1862 by a Survey employé and its height given as 23,890 feet. This measurement was unchecked, and the details of it were so meagre that the Survey did not endorse it, expressly stating that, for reasons given, they considered it too high—as I have been credibly informed, probably 1,000 feet or more too high. Any camp, therefore, that Mr. Johnson may have made on this mountain, the altitude of which he would naturally estimate with reference to the assigned height of the mountain itself, would have to be lowered by the same amount, which would bring it in any case below the altitude of our recent highest camps.

In order to place mountaineering on a scientific basis, among other things, the necessity of the measurement of altitudes reached, by one of the methods recognized as fairly reliable, is obvious, since such measurement alone defines with approximate exactness the height at which observed altitude phenomena may occur, and without it observations lose an important part of their value. In this connection I would call your attention to some of the subjective experiences, particu-

larly at night, of the nine Europeans engaged on this occasion, not merely in high climbing but in carrying loads, making and occupying camps measured at 19,900, 20,632, and 21,300 feet (by Airy's table 20,251, 21,093, and 21,600 feet).

Only one of the party—a porter—suffered from mountain sickness. Although complaining of headache and weakness at the third camp (20,632 feet), he started to go to the fourth with a light load of instruments, but was unable to keep up with the rest of us and soon fell behind, showing unmistakable signs of mountain sickness. Before reaching an altitude of 21,000 feet, though naturally a strong and healthy man, he collapsed entirely and became helpless. He complained of loss of sensation in his hands. His woollen mittens being drawn off, his fingers were found white and stiff, and, if not already frost-bitten, on the point of becoming so. Vigorous rubbing and pounding of his hands finally restored circulation, when he was sent down to the third camp. The fact that his hands, even when protected by thick woollen mittens, were brought by the cold to the verge of frost-bite, while my own, without any covering, were comfortably warm, shows how profoundly the circulation and vitality are prostrated by mountain sickness, and how dangerous it is for one suffering from this malady to be exposed to the cold of high altitudes.

At the second camp, 19,900 feet, and above, three suffered with severe headache, pain in the back and lower limbs, especially at night, and a fourth with headache at night; while three were troubled with cough without discoverable pharyngitis or bronchitis, which promptly disappeared in two cases on descending to the base camp, but persisted for a week in the third. These symptoms did not incapacitate any one, except the porter who was ill, from accomplishing the daily work.

Every one, as was to be expected, felt the effect of altitude on the respiration, though some to a greater extent than others. This, as usual, manifested itself by shortness of breath and panting on slight exertion. In the erect positions, when resting, the respiratory disturbance was not so noticeable, being marked

only on movement, but at night on lying down it became more urgent, being accompanied by a feeling of oppression, for the relief of which a number of deep inspirations were necessary. The frequent repetition of these wearied the respiratory muscles and even became painful. This constant gasping for breath interfered with sleep, no matter how tired one might be, and if, at last, after a long period of prostrating wakefulness, one did doze for a moment, one would immediately start up with frantic efforts to obtain sufficient oxygen to relieve the stifling sensation which threatened to terminate one's existence. During the five nights at our three highest camps no one obtained more than a few snatches of sleep, and four, of whom I was one, practically none at all. Those nights are not easily forgotten, when one lay sleepless on the snow, in the cold, and silence, and darkness, struggling for breath, and counting the slowly dragging hours, with a feeling that the strain could not be endured till daylight. It is scarcely necessary to say that even the strongest could not hold out for long against the depressing influence of loss of sleep, combined with the lowering of vital energy due to the scarcity of oxygen at these high altitudes. We were conscious of a distinct decline in strength on the last two days, and after six consecutive days of hard work and five sleepless nights every one felt an irresistible desire to relieve the tension by a descent to a lower level.

I have elsewhere, in connection with our highest camp in the Chogo Lungma region, at 19,358 feet, where five Europeans were affected in a similar manner during two nights, suggested the possibility that, in attempts on the highest Himalayan summits, where camps would have to be made at from 23,000 to over 27,000 feet, insomnia alone might prevent success. This corroborative experience of nine active mountaineers at camps approximately 550, 1,300, and 2,000 feet higher than that above mentioned, at all of which respiratory disturbance and insomnia were distinctly more pronounced, being most marked at the highest, appears to me now to justify the opinion that insomnia will be found to be an adverse factor in high

mountain work no less formidable than cold, deficiency of oxygen, and weather, and much more so than mountain sickness, inasmuch as it appears likely to affect a larger number of climbers.

Our primus stoves and hypsometer lamps felt the altitude quite as much as we. The alcohol in the lighting cups of the former would not burn until the cups had been heated by the application of half a dozen burning matches, and the petroleum gas issuing from the burners was only partially consumed when saucepans were placed at the ordinary distance above the latter, the rest escaping in smoky ill-smelling fumes. To insure complete combustion it was necessary to give the flame its full height so that the air could have access to it from every point. With this precaution petroleum in a primus stove makes a more efficient fuel and generates a much greater heat at high altitudes than alcohol used in any apparatus I have seen. The wicks of the hypsometer lamps were also lighted with difficulty, two or three matches in succession being required, and when they were lighted placing the lamps in the metal jackets promptly extinguished the flame. Having had the same experience previously, we had had the burning-tubes replaced by new ones of double the diameter, but this did not help the matter. The ordinary jacket does not admit sufficient oxygen to insure combustion at high altitudes. The lower half of the jacket, at least, should be made of wire-gauze so as to admit all the air possible.

We found the low temperature, -4° and -6° Fahr., and even that of 17° and 10° Fahr., with strong wind, trying, at night. Arctic explorers endure temperatures much lower than these without difficulty, but their work lies near sea-level, where the atmospheric pressure is more than double that at 21,000 feet, and they can encase themselves in furs without suffering from the weight. There the air also contains sufficient oxygen to enable them to breathe freely under any degree of exertion, and to sleep soundly, thus sustaining the bodily heat and vital forces at a normal limit, so that they can offer

a maximum power of resistance to cold. But at high altitudes, where vitality has been lowered by hard work, loss of sleep, and deficient oxygenation, where only a closely calculated minimum of clothing and bedding can be carried, an amount really insufficient to protect one against cold, a temperature of zero means a good deal more than it does to the Arctic explorer. The mountaineer at high altitudes is called upon to endure Arctic conditions without the means of protection available to the Arctic explorer. All our party, in addition to flannel-lined Mummery tents, with ground-sheets sewn in, were provided with rubber ground-sheets and well-padded eider sleeping sacks, enclosed in outer ones of camel-hair or army blankets; but these were inadequate to prevent us, even when wearing our thickest clothing besides, from feeling the cold sensibly at night at the second camp, and to a much greater degree at the two highest camps. Two thousand feet higher, where the cold would be considerably greater, we should probably have suffered more severely.

An effect of altitude upon the mind, which was noticeable here, as it has been elsewhere above 18,000 or 19,000 feet, deserves mention. Owing, perhaps, to a general loss of energy and to the disturbance of respiration and circulation incident to even moderate exertion, a mental condition of irresolution and disinclination to effort supervenes. The simplest actions assume formidable proportions, and even photography, which one recognizes as of the highest importance and which at ordinary altitudes is not a difficult process, becomes a bugbear; while the ascent of a peak, a really arduous undertaking at high altitudes, looms up as an almost impossible proposition. One has, therefore, often to call the will into play to its utmost power to force one's self to carry out what has been proposed. Those who are destined to raise the mountaineering altitude record much higher than it now stands will undoubtedly be persons of strong will and self-control.

Another point of interest is, that the guide and porters were able to carry loads of 40 lbs. to an altitude of 20,300 feet. The

gradients, except that of the ice-wall above the second camp, were not steep, and the last two marches upward were only about three hours: but to carry loads of 40 lbs. up inclines of 25° to 35° in snow ankle-deep, at that altitude, requires strength and endurance. How much higher they could have gone, or up how much sharper slopes, I will not venture an opinion. Savoye expressed grave doubts whether they could carry the same loads up much steeper gradients than were encountered, for at altitudes like these the difficulty of carrying a given load increases enormously with a comparatively slight increase in gradient. These men were certainly more efficient than coolies, and with their aid we were able to make two camps at altitudes which could not have been reached with coolies. The question to what height trained mountaineers will be able to carry outfit requisite to camping must be left to the future to decide. With the various obstacles to high climbing more accentuated in proportion to altitude, it seems certain that loads will have to be reduced as altitude increases, until a limit will at last be reached where not enough can be carried to support life and protect the mountaineer against cold and weather. That limit is likely, I fancy, to be found considerably below heights at which camps will have to be made to render the highest summits accessible.

One of the most interesting features of the Nun Kun is the plateau, or snow-basin, where we camped, which, enclosed by its circle of seven glittering peaks, sits like a diadem on the brow of the lofty massif which it crowns. Its surface is undulating, being depressed in the centre, but rising towards the bases of the peaks, where it shades off into the mountain slopes. The altitude of its highest part, which is at the north-east and beneath the second highest peak, is 21,600 feet. Thence it slopes away to the south-west to about 20,300 feet at the Ganri outlet under the highest peak. Its shape is oblong, its long diameter running north-east and south-west being 3 to $3\frac{1}{2}$ miles, and its conjugate diameter about $1\frac{1}{2}$ mile. The peaks rise sharply from it, and descend more sharply, largely in perpendi-

cular precipices, on the outer side. The four north-east peaks are connected by rock and snow saddles. The other three, including the highest at the south-west end, stand alone, rising directly from level ice. Around the bases of these three the basin has four outlets, by which its snows escape to form the ultimate source of the three principal glaciers of the massif, one stream descending north-west between the highest peak and the one next north-east to make one head of the Ganri glacier, two others to the south to feed the short but broad Fariabad glacier, and the fourth also to the south, to contribute to the north reservoir of the Shafat glacier. It is very unusual for three glaciers to originate in a single basin.

The Ganri glacier has two reservoirs, or heads, the larger one drawing its snows from the whole north-west side of the highest Nun Kun peak, from the north slope of an arête running from the latter to the Barmal ridge (an arête of D 41), and from the north-east face of D 41, which unite in a converging snow-field 3 miles wide at its upper part, with a fall from about 19,000 to 17,000 feet. The second head descends from the Nun Kun basin, leaving the latter at an altitude of about 20,300 feet. The two come together at the end of a rock arête of the highest Nun Kun, just above the entrance to a gorge enclosed on both sides by ragged mountains descending steeply to the Rangdum valley. The upper end of the gorge appears to be at an altitude of about 17,000 feet. From this point the glacier, crowding into the gorge in a greatly narrowed stream, tumbles more than 5,000 feet in a continuous line of seracs to near its termination 8 miles below its sources.

The most remarkable feature of this glacier, and one seldom seen in purely mountain glaciers, is its tongue, which ends abruptly at the river-bank, like that of a polar glacier extending to tide-water, in a perpendicular ice-precipice about 600 feet long and 200 high. Its successive layers, as they separate themselves, fall in miniature icebergs into the current, by which they are carried away and strewn along the river-banks below. The river washes the base of the whole front of the tongue,

apparently cutting under its lower edge somewhat; but the depth to which it can undermine the ice must be slight, as the latter does not project appreciably into the river, but breaks off at the edge of the bank. Here a river not many feet in depth is seen to produce the same effect upon a massive glacial tongue as is produced by the deeper waters of the polar oceans upon glacier tongues that push into them.

West of the tongue, and separated from it by a considerable interval, a giant lateral moraine, over 200 feet high and towering above it by more than 100 feet, extends entirely across the valley, and similarly a shorter lateral moraine projects on its east side. These moraines, together with the boulder-masses piled up in the space between them, show that the glacier was formerly much longer, wider, and thicker than at present, covering the whole width of the valley and impinging against the opposite mountain walls. The amount of detritus brought down to build these moraines and boulder-masses was enormous. At present the glacier, as seen both from above and below, appears remarkably clean and free from detritus.

The third or Fariabad glacier, beginning in the two southern outlets above mentioned of the basin, and reinforced by snows from the external slopes of the two western peaks, descends rapidly in a confused mass of ice-falls, caverns, crevasses, and seracs, directly south to the side of the Z 1 glacier above the opening of the Fariabad nala. It is separated from the Shafat glacier on the east by the ridge before mentioned, and is bounded on the west by a large spur from the highest Nun Kun, descending to the Fariabad opening. Its length is 4 and its width 2 miles. It is a most dangerous glacier to venture on.

The three principal Nun Kun glaciers are not very long, being respectively only 9, 8, and 4 miles in length, but, springing from heights of from 22,000 to over 23,000 feet, and falling 10,000 to 11,000 feet in these short distances, they possess great potential energy, developing ice-falls, ice-precipices, and seracs as large and high, crevasses and abysses as wide and profound,

ridges and ravines as pronounced, and moraines as gigantic, as those found on glaciers of far greater size and length.

We decided next to try to complete the circuit of the Nun Kun. Reconnaissance showed that no passage to the west from the top of the Shafat glacier at a high level existed, the way being barred by the spur descending from the highest Nun Kun to the Fariabad opening, followed by a succession of arêtes, snow-basins, and precipices: but if we could get down over the Fariabad glacier, or over a sharp rock-spur of Z 1, to the Fariabad opening lying 4,000 feet directly below, we might find a way by a nala that was seen to ascend north-west from the last, and to end in a great amphitheatre of ice and snow, at the top of which a saddle might be found. This would be a matter of pure pioneering, as the survey map was of no assistance, and none of our coolies knew anything of the proposed route. Success was by no means certain, but we determined to try it.

We accordingly cut loose from our base camp on August 9, with fifty coolies carrying a minimum of lightest outfit and nine days' supplies, sending all other luggage back to Suru in charge of a Gurkha and shikari by way of the Rangdum valley. We ascended the Shafat glacier, crossed the ridge above it, and descended the east edge of the Fariabad glacier till it plunged down so steeply and became so broken that it was no longer available. We then crossed to the rock-spur of Z 1 at an altitude of about 16,000 feet, and descended with considerable difficulty its precipitous greatly broken face, covered with loose rocks and *débris* for some 2,000 feet to the Z 1 glacier, which falling from the top of the mountain in a very steep ice-fall, fills the Z 1 nala almost to its junction with the Fariabad nala. A short distance above the tongue of this glacier the tongue of the Fariabad glacier, coming down from the Nun Kun in a great broken ice-wall, ends abruptly at its edge without any terminal moraine. The tongue of the Z 1 glacier ends in a steeply falling front of discoloured ice, 300 feet or more in height, with a sharply defined curving contour thickly seamed

with longitudinal crevasses. Here, also, there is no terminal moraine, though the nala-bed below is sprinkled quite thickly with *débris*.

Glaciers do not by any means always form terminal moraines. As to this fact, there is no difference of opinion among glaciologists, in whatever manner they may account for the formation of such moraines. The one hypothesis, that terminal moraines result from the gathering up and pushing along of the sub-glacial ground-moraine material, and even, as some hold, from the ploughing up of the terrain beneath the ground-moraine by an advancing tongue, and to a less extent by a stationary one, so as to form a wall at its end, fails to account for the cases where no terminal moraine results, even under the most favourable conditions of active advance. It also ignores or minimizes the part which moraine material carried by the tongue must play in the process of moraine building. It is evident that no moraine would be formed by a tongue in retreat.

The other hypothesis, that such moraines are wholly due to the deposition and excretion of the material lying in and upon the tongue, presupposes the co-operation of two factors: (1) that a glacial tongue should carry a considerable quantity of detritus and (2) that its front should remain stationary long enough for the detritus to be deposited in sufficient quantity to form a moraine, *i.e.*, the ice from above must advance to the terminal line as fast as the ice there melts and discharges its detritus upon that already deposited, till the process is completed. By this hypothesis, if a tongue carries no moraine material, no moraine should be formed under any conditions of advance or retreat. This fails, in its turn, to account for those cases where glacial tongues bearing no observable moraine material have been found to be bounded by high and large terminal moraines. If the end of a tongue recedes faster than the ice above it advances, no moraine results, its detritus being spread more or less evenly over the denuded surface without accumulating at any point.

The tongues of the two glaciers above mentioned, at present, furnish examples of the absence of one of these factors in each case. The Fariabad tongue bears no detritus to speak of, and has no deposit at its end. That of Z1 has been receding constantly and rather rapidly for some time, and, though carrying considerable *débris*, has left it evenly distributed over the nala-bed in front of it, not having paused long enough at any one point to build an elevation that might be called a moraine. Half a mile farther down the nala are some larger *débris* deposits overgrown with vegetation, which might be regarded as terminal moraines.

The successive terminal moraines often found in front of glaciers, with intervals between them little or not at all strewn with detritus, show that the same glacier, according to the presence of both these factors or to the absence of one or both, may build terminal moraines at one time and fail to do so at another. The smoothness of many such intervals would indicate that, during a period of recession, the respective tongue carried but little detritus. In Himalaya, glaciers may recede for considerable distances without leaving behind *débris* of any size, as in case of the Chogo Lungma tongue, which has retreated 1,184 feet in forty-two years, leaving a smooth river-bed below it. Observed facts appear to show that there is truth in both the above hypotheses, and it is not improbable that many moraines are formed by the combined action of both the methods they suggest. In 1902 and 1903, when I saw the tongue of the Tippur glacier, near that of the Chogo Lungma, it was adding to its large terminal moraine at a rapid rate by the deposit upon the latter of detritus from its upper surface.

From the Fariabad opening we followed up the nala leading north-west (North-West Nala). About a mile above the former, west of the rock-spur from the highest Nun Kun, a glacier from the base of that peak reaches the north side of the nala in an ice-fall, but does not penetrate it. Two miles above this, a glacier, descending from the mountains on the south, fills the nala for another mile. Two hundred feet in front of its tongue

is a high terminal moraine composed entirely of fine brown sand with ice still beneath it. This appears as if it might have been formed by the ploughing up of the nala-bed by the glacial tongue during an advance. The sand has protected the ice on which it rests from the sun's heat, while the uncovered ice behind it has melted entirely away. Higher up another glacial tongue enters the nala from the south, on which are two picturesque lakes. After ascending the steep glacial amphitheatre in which the nala ends, we came to a snow col at 17,347 feet, south of Nieves Penitentes peak, and east of the head of the Bara Zaj Nai nala, to which most dangerous-looking ice-slopes descend. We named this North-West col.

The only practicable passage from here appeared to be towards Mount Nieves Penitentes. A gentle descent of half an hour brought us to its base. Here we were overtaken by a dense mist. Having fortunately taken bearings before it set in, we pushed up an ascending snow-slope in the mist between an ice-fall and a bergschrund, and finally reached a rock-arête rising above the snow close under the western angle of Mount Nieves Penitentes at an altitude of 17,260 feet. This our coolies, who arrived two hours later, and who up to this point could give us no information, recognized and called the Barmal la. Here we camped four nights. The Barmal la commands a view of the head and of much of the course of the Barmal glacier, a large and handsome sheet of ice springing from the slopes of Nieves Penitentes peak and of D 41, 2 miles north, and from a high rock-wall connecting them, which we named the Barmal ridge. It runs westward for 8 miles, walled in on each side by a line of jagged peaks, and ends among green slopes south-east of a mountain-cirque enclosing the reservoir of a branch of the Bhot Kol glacier. The width of the Barmal glacier near its origin is about 2 miles, but it soon narrows to 1 mile, maintaining this width for over 5 miles. This glacier is not on the Survey map. It has, however, evidently been long known to the natives, who often cross it with yaks in going between Tongul and the Bara Zaj Nai, and also the Fariabad

nala. Local tradition credits one European with having visited it many years ago. In 1902, Rev. C. E. Barton and Dr. A. Neve, ascending from Tongul, crossed it to the Bara Zaj Nai nala at a point about 5 miles west of the highest Nun Kun. In 1904, Dr. Neve reports having crossed it again at the same point, and having climbed on the side of D 41 to a height stated as 19,200 feet.

On two successive days we made first ascents of Mount Nieves Penitentes, 19,080 feet, and D 41, 20,571 feet, from the summits of which we obtained not only comprehensive views of the surrounding region, but unobstructed views of the western end of the Nun Kun massif, of the two reservoirs of the Ganri glacier, and to the west the full sweep of the Barmal glacier to its end 8 miles beyond.

In the February, 1903, *Alpine Journal*, Dr. Neve shows a photograph of a section of the Barmal glacier taken from the pass to the Bara Zaj Nai, which he designates as "the Great Western Glacier of Nun Kun." He further states in his "Tourist's Guide to Kashmir," 6th edit., 1905, p. 122, that Mr. Barton and he, in 1902, "discovered that the Bhot Kol glacier comes all the way from the Nun Kun peak." Also in the February, 1905, *Alpine Journal*, p. 350, he speaks of the Barmal glacier as "the upper Bhot Kol glacier." From these quotations it is evident that he supposes the Barmal to be identical with the Bhot Kol glacier, and that its ultimate source is the highest Nun Kun peak.

I cannot agree with him in either of these suppositions. As regards the first, it may be said, having been over the same ground, and having also traversed the Bhot Kol glacier from end to end, I found no evidence that the two glaciers are identical. The lower end of the Barmal glacier, where Dr. Neve supposes the connection to be, is separated from the Bhot Kol by mountains and ridges from 17,000 to 19,000 feet in height. As regards the second supposition, from the summits of Mount Nieves Penitentes and D 41, the south-west and north-west faces of the great pyramid of the highest Nun Kun are seen to

be separated by a sharp rock-arête broken at one place, running down the pyramid from its apex to its base on the high plateau, where the arête is lowest. Thence it passes directly west, rising as it goes, and joins the Barmal ridge at its highest central point, about 19,000 feet.

This arête and the Barmal ridge turn all the snows coming from the Nun Kun peak, and those of the plateau between this and the Barmal ridge, into the west reservoir of the Ganri glacier on the north, and towards the North-West nala on the south side, and not a particle of snow from the Nun Kun can enter the Barmal glacier. Had Dr. Neve climbed sufficiently high on D 41 to fully overlook the Barmal ridge, he would have seen the impossibility of this supposition.

The ascent of Mount Nieves Penitentes and of D 41 was by no means easy. Both are peaks of the very first order. One slope of the former requiring three-quarters of an hour to climb, was steeper than could be measured by the scale of Abney's level, being apparently 70° or 72° . The last 1,500 feet of D 41 was also difficult, consisting of ice-slants varying from 60° to 70° . Fortunately these were wholly covered, as stated, with *nieves penitentes*, forming a precipitous giant stairway of ice, by which we were able to scale it in safety. Had its surface been smooth, the undertaking would have been much more difficult, more fatiguing, and highly dangerous. Half an hour after the top was reached a thick mist swept up from the Barmal glacier and enveloped us, shutting out all landmarks. This was accompanied by an icy wind which congealed the breath into icicles on our moustaches and covered our clothing with feathery fringes. Recognizing the danger both of remaining and descending, we preferred to attempt the latter, and succeeded in getting down in two parties invisible to each other, by following the slight spoor made in ascending. Previous to departure a stone cairn was built on the summit and notes of the ascent placed in it.

The Barmal la stands perhaps 600 feet above the Barmal glacier, at the top of a very steep ice-wall cleft by two

bergschrunds, to ascend or descend which requires a good knowledge of ice-craft. Our coolies were powerless to negotiate it alone, which fact prevented many of them from deserting during the four days we camped there, and even the guide and porters would not venture on it unroped. The rock-cairns stand on the summit of the la. By whom they were made we could not learn. No records were found in them, and I know of no account of any European having visited this place. As it is practically certain that natives could not reach it from the Barmal glacier unless the ice-wall were greatly changed, it may be surmised that some party, having come up to it from the south side, mistaking it for a snow-pass somewhat farther west, and having found the descent to the Barmal glacier barred by the ice-wall, built these cairns as a beacon by which the place might in future be avoided. The existence of other cairns on ledges to the south, indicating the way to the other pass, supports this view. Half or three-quarters of a mile west lies the snow-pass referred to, accessible by easy snow-slopes, leading from the Barmal glacier to the Bara Zaj Nai. It is over this pass that the natives take their yak-caravans from Tongul, and this was the pass used by Dr. Neve, also under the name of Barmal la.

The Sentik la is a depression about a mile distant from D 41, in the ridge leading west from it. Over this pass lies the way from the Barmal glacier to Tongul, the nearest village in the Suru valley. Below the pass the Sentik glacier, about three miles long, coming from the north side of D 41 and neighbouring mountains, and receiving two ice-falls from the west reservoir of the Ganri glacier, descends north to the head of a very steep nala, enclosed on both sides by jagged rock-peaks, below which slopes and ridges fall away to Tongul, a short march from Suru. By this route we returned to the latter village, having covered over 90 miles of rough country in completing the first circuit of the Nun Kun, besides many more in exploration and ascents.

August 18 and 19 were very warm days at Suru, the sun

burning with unusual fervour. We had found during the summer, as during those of 1902 and 1903, sun maxima of 200° to 206° Fahr. at high altitudes to be not at all uncommon, but had never known them to attain the figures reached on these days. On the 18th, at 1 p.m., the sun thermometer registered 206° , and, at 1-15, 212° Fahr. As this last figure seemed incredible, the instrument, which was so hot that it could scarcely be touched by the hand, was raised to the vertical position and shaken, but the mercury did not fall. At 1-25 it reached 216° Fahr. This was not only an unusually high maximum, but it occurred at an unusually late hour, most maxima I have observed occurring at or before 1 o'clock.

On the 19th, at 12-30 p.m., the thermometer registered 196° . At 12-45, 213° . At 1, through a thin film of cloud, 217° , not falling when placed vertical; and at 1-5, 219° Fahr. The altitude of Suru is 10,850 feet. As sun-temperatures increase in proportion to altitude, what must the temperature on these days have been at over 20,000 feet? On these, as on other occasions when I have noted high temperatures, the maxima showed themselves in sudden waves or flashes of heat lasting a few moments and then subsiding. It may also be noted that, as on the 18th, some of the highest temperatures have occurred when the sky was covered with thin cirrho-stratus clouds.

Proceedings of the Society.*

July 1st to December 31st, 1907.

The 760th meeting of the Society was held at Knutsford on Saturday, July 13th, 1907.

The Rev. G. A. Payne (author of "Mrs. Gaskell and Knutsford," etc.) met the Members at the station and kindly acted as leader.

A visit was first made to the Unitarian Chapel, built in 1687, in which Mr. Payne gave a short chat on its interesting history, the references to Knutsford and district, mentioned in Mrs. Gaskell's novels, and her own residence in the town.

Later on the party proceeded to Norbury Booths Hall, where they were met by Mr. A. L. Goodson, J.P., who kindly showed them the gardens and grounds of the Hall, in which was a very ancient and beautiful Beech tree, one of the finest in the neighbourhood. The Hall was erected by Peter Legh, Esq., in 1745.

Before leaving Mr. Goodson, Mr. D. A. Little moved, Mr. C. E. Reade seconded, and it was resolved that the hearty thanks of the Members be offered to Mr. Goodson for his kindness. Mr. Goodson, in responding, invited the Members to visit the grounds again next year, so that the Spring wood, the ruins of the old moated hall, etc., might be seen by the Members.

The party proceeded along the lovely "Lime Walk" and back to Knutsford, where the Public Library was pointed out.

Before leaving the Cranford Café, Mr. Payne mentioned the places connected with Mrs. Gaskell, which it was proposed to visit, and Mr. Theodore Gregory, F.C.A., moved, Mr. T. W. Sowerbutts seconded, and it was resolved that the thanks of all present be given to the Rev. G. A. Payne for his services as leader. Mr. Payne made a suitable response, and then the Gaskell Tower (erected by Mr. Richard H. Watt as a memorial to the authoress), Mrs. Gaskell's and other houses at Heathside, Tatton Gates, The Old Vicarage, etc., were visited, the explanations of Mr. Payne adding greatly to the interest of the walk.

The party were very fortunate in the weather, as though the rain was falling heavily on arrival, it ceased in an hour, and the remainder of the afternoon was fine.

The 761st Meeting of the Society was held at Barton Moss on Saturday, July 27th, 1907.

The Members, under the leadership of Mr. R. Cobden Phillips, proceeded to Peel Green by car, and then walked to the Farm Colony, established by the Distress Committee of the Manchester Corporation.

The party were impressed with the evidence of the amount of work done under the supervision of Mr. Stewart Gray.

* The Meetings were held in the Geographical Hall, unless otherwise stated.

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The walk was continued by way of the Grange to Barton Moss Station, the various wild flowers, the peat underneath the eighteen inches of soil, and other objects of interest being noted.

Mr. T. W. Sowerbutts moved, Mr. C. E. Reade seconded, and it was resolved that the sincere thanks of those present be given to Mr. Phillips for his kindness in leading the party and for the explanations which had made the ramble both interesting and profitable, as even the most experienced acknowledged that something new had been brought forward.

The 762nd Meeting of the Society was held on Tuesday, October 1st, 1907, at 6 p.m.

An inspection of the Museum and Library constituted the first hour's proceedings, light refreshments being served in the Members' room.

At 7-15 p.m. Mr. Councillor John Snaddon took the chair, and, on his proposition the Minutes of the Meetings held on April 16th, June 29th, July 13th, and July 27th were taken as read.

The election of the following Members was announced :—

Honorary : Brigadier-General Sir J. Willcocks, K.C.M.G.

Ordinary : Miss J. P. Kitchener, Messrs. A. M. Tejeria (Spanish Consul), Cornelius Sever, Wm. Rigby, J. H. Haywood, Edwin Schofield, J.P., Young J. Pentland, P. K. Glazebrook, R. Ernest Hope and Captain A. Doggett.

Associate : Miss H. M. Burgess, Messrs. J. Carter Moon and R. Crosthwaite, M.A., B.Sc.

Mr. J. Reid Gray spoke of "Some Ancient Dreams of Italy in Stone and Paint," and exhibited a fine collection of sketches in colour, made by him during his visit. (See page 152.)

A hearty vote of thanks to Mr. Gray for his very interesting address was moved by Mr. J. J. Gleave, seconded by Mr. John R. Smith, supported by the Chairman and carried unanimously.

The 763rd Meeting of the Society was held on Tuesday, October 8th, 1907, at 7-30 p.m. In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on October 1st were taken as read.

The election of the following Members was announced :—

Ordinary : Mrs. Laycock, Mrs. M. Matusch, Miss A. I. Taylor, Messrs. J. Bishop, A. E. Buchanan Brown, J. F. Cooper, A. T. Greenwood, J. Reid Gray, A. Guggenheim, A. Hanemann, A. Lyall, Joe Nicholson, W. Owen, A. Saalfeld, M. Shaw, and Walter Taylor.

Associate : Miss M. Hopwood and Mr. W. H. Ward.

Mrs. Leonidas Hubbard, junr., addressed the Members on "A Woman's Way through Unknown Labrador" (p. 169). The Address was illustrated with original Lantern Slides.

Councillor A. Y. Scholfield moved, and Mr. Hermann Woolley, F.R.G.S., seconded a very hearty and appreciative vote of thanks to Mrs. Hubbard for the intensely interesting account of her journey, and the resolution was passed unanimously with acclamation.

The 764th Meeting of the Society was held on Tuesday, October 15th, 1907, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting, held on October 8th, were taken as read.

The Chairman communicated a letter received from the secretary of Mr. Mark Sykes, stating that Mr. Sykes had been suddenly taken ill and was unable to come to Manchester to lecture on "The Kurdish Tribes of Asiatic Turkey" as arranged.

A resolution of sympathy with Mr. Sykes in his illness, and hoping for his speedy recovery was passed unanimously.

The Chairman announced that Mr. J. Howard Reed, F.R.G.S., had very kindly, at short notice, agreed to lecture in place of Mr. Sykes.

Mr. Reed gave a lecture on "A Visit to Japan," with lantern illustrations.

A cordial vote of thanks to Mr. Reed for his very interesting address was passed unanimously on the proposition of the Chairman.

The 765th Meeting of the Society was held on Tuesday, October 22nd, 1907, at 7-30 p.m. In the chair, Mr. J. Howard Reed, F.R.G.S.

The Minutes of the Meeting held on October 15th were taken as read.

The Chairman announced the election of the following members:—

Ordinary: Miss Ada Lemon, Messrs. L. Aron, P. Bles, James Brown, J.P., G. F. Burditt, John Dendy, E. Hewitt, W. Higginbottom, G. Reiss, Hans Renold, J. Walter Robson, Wm. Ruttenau, Theo. Schlagintweit (Imperial German Consul), H. Whitworth, W. H. Zimmern and Dr. L. Sterne.

Associate: Mr. Walter Thorpe.

The Chairman reported that he attended a special gathering at the Bury Athenæum on the previous evening, as a representative of the Society.

Dr. E. M. Wrench, M.V.O., gave an account of some "Observations of the Effects of Glaciers in Derwent Valley, Derbyshire," illustrated with original Lantern Slides.

Councillor John Stevenson moved, Mr. Bernard Hobson, M.Sc., seconded, and it was unanimously resolved that the best thanks of the meeting be given to Dr. Wrench for his very interesting and instructive address.

The 766th Meeting of the Society was held on Tuesday, October 29th, 1907, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting held on October 22nd, 1907, were taken as read.

The Rev. Astell D. Powell, M.A., described a journey "Round the 'All Red Route' with a Camera," illustrated with original lantern slides.

Mr. C. A. Clarke moved, Mr. R. Emmett Hailwood seconded, and it was unanimously resolved that the hearty thanks of the Meeting be given to the lecturer for his very interesting address.

The 767th Meeting of the Society was held on Tuesday, November 5th, 1907, at 7-30 p.m. In the chair, Mr. F. Zimmern.

The Minutes of the Meeting, held on October 29th, 1907, were taken as read.

The Chairman announced the election of the following members:—

Honorary : Mr. J. Scott Keltie, LL.D., Secretary of the Royal Geographical Society.

Ordinary : Miss M. Simon. Messrs. R. Ambler, C. Beving, Wm. Harris, Ph. Segner, E. D. Simon and A. Wilson.

Mr. W. P. James Fawcus gave an address on "Experiences in Zanzibar and East Africa," illustrating his remarks with lantern slides prepared from photographs he had taken.

Mr. C. A. Clarke moved, Mr. R. Emmett Hailwood seconded, and it was unanimously resolved that the best thanks of the meeting be given to Mr. Fawcus for his very interesting address.

The 768th Meeting of the Society was held on Tuesday, November 12th, 1907, at 7-30 p.m. In the chair, Mr. John R. Smith.

The Minutes of the Meeting, held on November 5th, were taken as read.

Mr. T. H. Coates gave an account of holiday visits to the "Channel Islands," illustrating his remarks with a fine set of lantern slides.

Councillor J. Snaddon moved, Mr. George Pearson seconded, and it was resolved that the hearty thanks of the meeting be given to Mr. Coates for his very interesting address.

The 769th Meeting of the Society was held on Tuesday, November 19th, 1907, at 7-30 p.m. In the chair, Mr. David A. Little.

The Minutes of the Meeting, held on November 12th, were taken as read.

The election of the following New Members was announced :—

Ordinary : Rt. Rev. Bishop Welldon (Dean of Manchester). Mr. William Robert Bax.

Associate : Messrs. Oscar Johnson and W. P. Rutter, B. Com.

Affiliated Society : Kersal School.

Miss Margaret Dowson gave an address on her journey in India, entitled "Snapshots in India," and illustrated her remarks with original lantern slides.

Mr. M. W. Thompstone moved, Mr. E. Russell Evans seconded, and it was resolved that the best thanks of the meeting be given to Miss Dowson for her very interesting address.

Mr. J. Howard Reed, F.R.G.S., moved, Mr. J. B. Dowdall seconded, and it was unanimously resolvèd "that the congratulations of this meeting be conveyed to the Chairman of the Council, Rev. S. A. Steinthal, on the attainment of his 81st birthday."

The 770th Meeting of the Society was held on Tuesday, November 26th, 1907, at 7-30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting, held on November 19th, were taken as read.

Mr. James Stephenson Reid described a "Cycling Tour through Connemara and the West of Ireland." The address was illustrated with lantern slides.

Mr. Robert Stewart moved, Mr. Wm. Turner seconded, and it was unanimously resolved that the best thanks of the meeting be given to Mr. Reid for his very interesting address.

The 771st Meeting of the Society was held on Tuesday, December 3rd, 1907, at 7-30 p.m. In the chair, Mr. Hermann Woolley, F.R.G.S.

The Minutes of the Meeting, held on November 26th, 1907, were taken as read.

The election of the following four Ordinary Members was announced :—Councillor Sir T. Thornhill Shann, J.P.; Rev. H. E. Dowson, B.A.; Messrs. Hy. Shorrocks and J. Smith.

Dr. Wm. Hunter Workman, M.A., F.R.G.S., described "An Exploration of the Nun-Kun Mountain Group and its Glaciers, in Suru, Kashmir"; illustrating his remarks with a very fine set of original lantern slides. (See page 183.)

Mr. F. Zimmern moved, Mr. R. Cobden Phillips seconded, and it was unanimously resolved that the best thanks of the meeting be given to the lecturer for his very interesting address.

The 772nd Meeting of the Society was held on Tuesday, December 10th, 1907, at 7-30 p.m. In the chair, Mr. Harry Nuttall, M.P., F.R.G.S.

The Minutes of the Meeting, held on December 3rd, 1907, were taken as read.

On the proposition of the Chairman, it was unanimously resolved that the sympathy of the Members present be conveyed to Dr. F. Nansen in his bereavement.

It was also resolved that the sympathy of those present with the relatives of the late Mr. G. M. Richardson be conveyed to them.

The Chairman announced that a letter had been received from the Rev. S. A. Steinthal thanking the Members for their congratulations *re* his 81st birthday.

Mr. Frederick Lambert, F.R.G.S., described a journey to and "Through the Mammoth Cave of Kentucky in search of the Eyeless Fish and other Blind Fauna," illustrating his remarks with some beautiful lantern slides. He concluded by showing some interior views from other American caves on his patent Crystalline Screen, explaining the formation of stalactites and stalagmites in a very interesting manner.

Mr. Councillor John Snaddon moved, Mr. George Pearson seconded, Mr. James Hindle and the Chairman supported a very cordial vote of thanks to Mr. Lambert for his very interesting lecture and for the beautiful slides exhibited.

The 773rd Meeting of the Society was held on Tuesday, December 17th, 1907, at 7-30 p.m. In the chair, Mr. R. Cobden Phillips.

The Minutes of the Meeting, held on December 10th, 1907, were taken as read.

The Chairman mentioned the death of Mr. John Hardman, of Radcliffe, who had been a member for 17 years.

It was resolved that the sympathy of those present be conveyed to the relatives of Mr. Hardman.

The election of the following five Ordinary Members was announced :—Messrs. George Atkinson, F.R.G.S., Harold L. Behrens, J. H. Greenhow (Norwegian Consul), Thomas A. Garlick and Thomas Martin.

The Rev. Fred A. Rees described a journey to "The Swiss and Italian Lakes." The address was illustrated with lantern views.

On the proposition of Mr. Geo. Ginger, seconded by Mr. C. A. Clarke, it was unanimously resolved that the best thanks of the meeting be given to the lecturer for his very interesting address.

The 774th Meeting of the Society was held on Friday, December 20th, 1907, at 6.30 p.m., and took the form of a lecture to the children of the Members. In the chair, Mr. T. W. Sowerbutts, A.S.A.A.

Mr. J. Howard Reed, F.R.G.S., gave a lecture on "Some Great African Travellers and their Discoveries," illustrating his remarks by a large number of fine lantern slides.

A round of hearty applause in thanks to Mr. Reed was given by the children in appreciation of his very interesting address.

List of Maps, Books, Journals, Additions to the Museum, etc.

ACQUIRED BY THE SOCIETY FROM JANUARY 1ST TO DECEMBER 31ST,
1907.

MAPS.

GENERAL.

- Weltverkehrskarte entworfen von A. Herrich. 1/50.000,000. Glogau: Carl Flemming. * Mr. Charles Roeder.
- Weltkarte der Azimute und der Entfernungen für Hamburg. (Mit einer Karte und einer Tafel) von G. Grablowitz. * Dr. R. Schütt, Hamburg.
- Map of the Ottoman Empire, the Black Sea and the Frontiers of Russia and Persia, by James Wyld. 75 miles to 1 inch. London: Jas. Wyld, 1853. * Mr. Charles Roeder.

EUROPE.

- The Imperial Geographical, Historical, Chronological, Statistical, Mineralogical, and Railway Chart of the United Kingdom of Great Britain and Ireland. Scale 30 miles to 1 inch. Glasgow: J. Stark. * Mr. Charles Roeder.
- The British Isles. Scale: geographical miles 60=1 degree. London: Cassell, Petter and Galpin. * Mr. Charles Roeder.
- Isle of Wight. By John Albin. Scale: 1 inch to 1 mile. Newport, I. of W.: J. Albin, August 12th, 1807. * Mr. Charles Roeder.
- Devonshire, with its Railways. 6 miles to 1 inch. London: H. G. Collins. * Rev. S. A. Steinthal, F.R.G.S.
- Ordnance Survey Maps. No. 73, N.W. Market Drayton; No. 78, N.E. Bangor; No. 79, N.W. Denbigh; No. 82, N.W. and N.E. Chesterfield; No. 87 N.W., S.E., S.W. Doncaster; No. 94, N.E., S.E. Beverley. Scale: one inch to one mile. London: Ordnance Survey. 1840—1858. * Mr. Charles Roeder.
- A Mineralogical and Geological Map of the Coalfield of Lancashire, with parts of Yorkshire, Cheshire and Derbyshire, by Elias Hall. Castleton, Derbyshire. About 1832. (Hand coloured.) * Mr. Charles Roeder.
- Plan of Manchester and Salford, with their Environs, showing the division of Property and the length of each street, from an Actual Survey by Richard Thornton. Manchester: Banks & Co. 1832. * Mr. Charles Roeder.
- Lancashire Sheet 104. Manchester and Salford. Scale: 6 inches to 1 mile. London: Ordnance Survey. 1848. * Mr. Charles Roeder.
- Ordnance Map, Southport, Preston, St. Helens, Bury. Scale 1 inch to a mile. London: Ordnance Survey. 1842. * Mr. Charles Roeder.

* Donor.

- Plan of the Town and Borough of Liverpool, with Birkenhead, Tranmere, Seacombe, New Brighton, etc. By J. Bartholomew. 2 in. to a mile. London and Edinburgh : A. Fullarton. * Rev. S. A. Steinthal, F.R.G.S.
- Yorkshire. Sheet 165. Grindleton. Scale six inches to a mile. London : Ordnance Survey. 1850. * Mr. Charles Roeder.
- Ordnance Survey Maps. No. LXXXIII., Lincoln. No. LXXXV., Mouth of the Humber. Scale : 1 inch to 1 mile. London. 1872. * Mr. Charles Roeder.
- Pembrokeshire. (Two sheets.) Scale : one inch to a mile. London : Ordnance Survey. 1843. * Mr. Charles Roeder.
- Isle of Man. Scale : 1 inch to 1 mile. London : Ordnance Survey. 1874. * Mr. Charles Roeder.
- Map of the Isle of Man. Scale : $\frac{3}{4}$ inch to 1 mile. London and Liverpool : George Philip and Son. * Rev. S. A. Steinthal, F.R.G.S.
- Map of Ireland. With the lines of Water Communication. With 14 Index Maps of the various Waterways. Dublin : Allens' Lithog. : for Irish Inland Navigation Company. 1830. (Mounted in one length, over seven yards long and about a foot wide.) * Mr. Charles Roeder.
- Norway. Kart over Finmarkens Amt. Scale : 1/500,000. * Norges Geografiske Opmaaling.
- Norway. General Kart over det sydlige Norge. Scale : 1/400,000. Sheet XV. * Norges Geografiske Opmaaling.
- Norway. General Kart. Scale : 1/350,000. Sheet A., 1—11. * Norges Geografiske Opmaaling.
- Norway. Topografisk Kart over Kongeriget Norge. Scale : 1/100,000. Sheets : 4 A, 9 B, 10 C, 31 B, 25 D, 38 D, 46 D, K 11, K 12, K 13, K 14, M 9, S 4, V 1, V 8, V 9, W 1, W 7, W 8, Y 3, Æ 3. * Norges Geografiske Opmaaling.
- Norway. Special Kart over Havne i Finmarken. Scale : 1/50,000. Sheet II. * Norges Geografiske Opmaaling.
- Norway. Special Kart B. Scale : 1/50,000. Sheets : 40¹, 45¹, 50, 53, 55, 65, 66, 68. * Norges Geografiske Opmaaling.
- Norway. Special Kart C. Scale : 1/25,000. Sheets : 1, 2, 3. * Norges Geografiske Opmaaling.
- Karte der Gegend Zwischen Nürnberg, Bamberg, Bayreuth, Neumarkt mit besonderer Berücksichtigung der Fränkischen Schweiz. Von Oberlieutenant A. Hanser. Nürnberg : J. L. Lotzbeck. * Rev. S. A. Steinthal, F.R.G.S.
- Panorama du Rigi Koulm. Nouvelle Edition. 1860. Chez Alphons Zimmermann au Rigi Koulm. * Rev. S. A. Steinthal, F.R.G.S.
- Travelling Map of North Italy, with Index. From Keith Johnson's Royal Atlas of Modern Geography. * Rev. S. A. Steinthal, F.R.G.S.
- Map of Hungary (Hungarian Names). Scale : 1/600,000. Budapest. 1907. * Mr. W. H. Shrubsole, F.G.S.
- Turkey. 1/250,000. Sheets : Adrianople. Rodosto. Vize. T.S., G.S. No. 2,097. London : War Office. 1906. * The Director of Military Operations.
- Caucasia. Plate 1. Scale : 32 miles to 1 inch. T.S., G.S. No. 2,167. * The Director of Military Operations.

ASIA.

Turkey in Asia, with Russian Armenia and the Countries on the Caucasus. Scale : about 50 miles to 1 inch. London : George Philip and Son. *Mr. Charles Roeder.

Persia and Afghanistan. Scale : 1/4,055,040. T.S., G.S. No. 2,149. London : War Office. April, 1906. *The Director of Military Operations.

AFRICA.

Afrika. 1/25,000,000. Stieler's Hand Atlas. No. 68. Gotha : Justus Perthes. *Mr. Charles Roeder.

Index Map of Africa. For Sheets of Maps, 1/1,000,000 and 1/250,000 T.S., G.S. Revised November, 1907. I.D.W.O. No. 2,273. *The Director of Military Operations.

Index Maps to Sheets of South African Topographical Surveys on Scales of 1/250,000 and 1/125,000. Scale : 1/4,000,000. T.S., G.S. No. 2,214a. London : War Office. Revised June, 1907. *Mr. Edward Stanford.

Gambia. Reproduced from the Work of the Anglo-French Boundary Commission, 1904-1905. Scale : 1/250,000. T.S., G.S. No. 1,958. London : War Office. 1906. (Two Sheets.) *The Director of Military Operations.

Map of Part of West Africa, including Gold Coast, Northern and Southern Nigeria. Scale : 1/6,336,000. Topographical Section. General Staff. No. 1,935. War Office. 1907. *The Director of Military Operations.

Africa. 1/1,000,000. Gold Coast, Northern Territories. Part of Sheet 60. T.S., G.S. No. 2,146. London : War Office. 1906. *The Director of Military Operations.

Africa. 1/1,000,000. Parts of Sheets 72 and 73. Gold Coast (Provisional). T.S., G.S. No. 2,204. London : War Office. 1907. *The Director of Military Operations.

Gold Coast. 1/125,000. Sheet 72. K. 111. Published by the authority of Sir John Pickersgill Rodger, Governor, under the direction of Major F. G. Guggisberg, R.E., F.R.G.S., Director of Surveys, Gold Coast. March, 1907. *Mr. Edward Stanford.

Outline Map of Northern and Southern Nigeria. Scale : 1/2,000,000. T.S., G.S. No. 2,235. 1907. *The Director of Military Operations

Political Map of Northern Nigeria. Compiled at the Intelligence Office, Zungeru. Scale : 1/2,000,000. T.S., G.S. No. 2,248. *The Director of Military Operations.

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- London. Imperial Institute. Bulletin. Vol. V., Nos. 1-4.
- London. India Office. List of Maps, Plans, etc., of India and other parts of Asia. Appendices, Nos. LVIII-LX.
- London. Royal Botanic Gardens, Kew. Bulletin. 1907, Nos. 1-10 and Appendices I-V.
- London. Royal Society of Literature. Transactions. Vol. XXVII., Parts 3, 4. Report and List of Fellows. (See also List of Books.)
- London. War Office. Topographical Section, General Staff. Maps. (See list of Maps.) Appendix XI. Text Book of Topographical Surveying. (Tables used in Projecting Maps.)
- London. War Office. Catalogue of Maps. Accessions. 1906, July to December; 1907, January to June.
- London. War Office Library. List of Accessions. 1907, January to December.
- London. War Office Library. Geographical Index (Extra European) of Accessions. 1906, Annual; 1907, January to December.
- London. War Office. Catalogue of Maps in Books and Periodicals contained in the War Office Library. Accessions. 1906.
- Manchester. Literary and Philosophical Society. Memoirs and Proceedings. Vol. 51, Parts I, II., and III.
- Manchester. Museum, Owens College. Publications. Nos. 61, 62.
- Manchester. Textile Recorder. 1907, Nos. 285-296.
- Newcastle-on-Tyne. Tyneside Geographical Society. Journal. (Nothing received.)
- Newcastle-on-Tyne. North of England Institute of Mining and Mechanical Engineers. Transactions. Vol. LIV., Part 9; LV., 7; LVI., 4, 5, 6; LVII., 2-6. Annual Report for 1896-7. Subject-Matter Index of Mining, Mechanical and Metallurgical Literature for the Year 1902.
- Oxford. Geographical Association. The Geographical Teacher. Vol. III., Parts 5, 6; IV., 1, 2, 3.
- Penzance. Royal Geological Society of Cornwall. Transactions. Vol. XIII., Part III.
- Rochdale. Literary and Scientific Society. Transactions. (Nothing received.)
- Salford. Museum, Libraries and Parks Committee. 59th Annual Report. 1906-7.
- York. Yorkshire Philosophical Society. Annual Report for 1906.

MISSIONARY.

- Freiburg-in-Breisgau. Die Katholischen Missionen (Illustrated). 1907, January to December.
- London. Baptist Missionary Society. Missionary Herald. 1907, December.
- London. British and Foreign Bible Society. (Nothing received.)
- London. Church Missionary Society for Africa and the East. Report of Proceedings. 108th year, 1906-1907.
- London. Church Missionary Review. 1907, January to December.

- London. Colonial and Continental Church Society. Greater Britain Messenger. 1907, January to December.
- London. London Missionary Society. The One Hundred and Twelfth Report for the year ending March 31st, 1907.
- London. Illustrated Catholic Missions. 1907, January to December.
- London. The Society for the Propagation of the Gospel in Foreign Parts. Report for the year 1906.
- London. Universities Mission to Central Africa. "Central Africa." 1907, January to December.
- London. The United Methodist Church. Missionary Echo. 1907, January to December.
- Mangalore. Basel German Evangelical Mission in South-Western India. The Sixty-Seventh Report for the year 1906.

COLONIAL.

- Adelaide. Royal Geographical Society of Australasia. South Australian Branch. Proceedings. Session 1906-7. Vol. IX.
- Brisbane. Royal Geographical Society of Australasia. Queensland Branch. Queensland Geographical Journal. 1905-6, Vol. XXI.; 1906-1907, Vol. XXII.
- Brisbane. Queensland Museum. Annals. No. 7.
- Brisbane. Department of Mines. Queensland Geological Survey. Publications. Nos. 207-213, 216.
- Bulawayo. Rhodesia Scientific Association. Proceedings. 1906, Vol. VI., Part II.
- Cape Town. South African Philosophical Society. Transactions. Vol. XIII., Part II.; XVI., 5; XVII., 1.
- Halifax. Nova Scotian Institute of Science. Proceedings and Transactions. 1903-1904. Vol. XI., Part 2.
- Melbourne. Royal Geographical Society of Australasia. Victorian Branch. Victoria Geographical Journal. 1905-1906, Vols. XXIII., XXIV.
- Melbourne. Victorian Statistical Department. Year Book. 1906-7.
- Perth. Western Australia Geological Survey. Bulletin Nos. 23-26.
- Port Moresby. British New Guinea. Annual Report for the year ending June 30th, 1906.
- Quebec. Geographical Society. (Nothing received.)
- Sydney. Royal Geographical Society of Australasia. New South Wales Branch. (Nothing received.)
- Sydney. New South Wales. Department of Mines and Agriculture. Geological Survey. Records. 1907. Vol. VIII., Part III.
- Toronto. Canadian Institute. (Nothing received.)
- Wellington. Department of Lands and Survey. New Zealand. Reports for the year 1906-7. C-1, General Report; C-1A, Surveys; C-1B, State Nurseries and Plantations; C-4, Timber Industry.

FOREIGN.

- Alger. Société de Géographie d'Alger et de l'Afrique du Nord. Bulletin. 1906. Nos. 3, 4; 1907, 1, 2, 3.

- Antwerp. Société Royale de Géographie. Bulletin. Tome XXX.; Tome XXXI., Fascicules 1-4.
- Baltimore. Johns Hopkins University. Studies in Historical and Political Science. Series XXIV., Nos. 11-12; XXV., Nos. 1-7. Circulars. 1906, No. 10; 1907, Nos. 1-8.
- Baltimore. Maryland Geological Survey. Wm. Bullock Clark, State Geologist. County Geologies. (See List of Books.)
- Bergamo. Revista Mensile Illustrata D'Arti, Letteratura, Scienze e Varietà. "Emporium." 1907, January to December, Nos. 145-156.
- Berkeley. University of California. Publications. Department of American Archaeology and Ethnology. Vol. II., No. 5; IV., Nos. 3-6, Index, etc.; V., Nos. 1, 2.
- Berlin. Gesellschaft für Erdkunde. Zeitschrift. 1907, Nos. 1-10.
- Berlin. Deutsche Kolonialzeitung. 1907, Nos. 1-52.
- Bern. Geographische Gesellschaft. Jahresbericht. 1905-1906, Band XX.
- Bordeaux. Société de Géographie Commerciale. Bulletin. 1907, Nos. 1-11.
- Boston, U.S.A. State Library of Massachusetts. (Nothing received.)
- Boston, U.S.A. Public Library of the City of Boston. Monthly Bulletin. Vol. XII., Nos. 1-12. Annual List of New and Important Books added to the Library. 1905-1906. Fifty-Fifth Annual Report. 1906-1907.
- Bremen. Deutsche Geographische Gesellschaft. Blätter. Band XXX., Heft 1-4.
- Brussels. L'Etat Indépendant du Congo. Bulletin Officiel. 1907, January to December and Supplements.
- Brussels. Société Royale Belge de Géographie. Bulletin. 1907, Nos. 1-6.
- Brussels. Le Mouvement Géographique. 1907, Nos. 1-52.
- Brussels. La Belgique Maritime et Coloniale. Journal Hebdomadaire. 1907, January 1st to December 31st.
- Brussels. Institut Colonial Internationale. Bibliothèque. 7^{me} Série. Les différents Systèmes d'Irrigation. Tome II. Compte Rendu de la Session tenue à Bruxelles, 17, 18, and 19 June, 1907.
- Brussels. Société d'Etudes Coloniales. Bulletin. 1907, Nos. 1-12.
- Brussels. Congrès International pour l'Etude des Régions Polaires tenu à Bruxelles du 7 au 11 Septembre, 1906. Rapport D'Ensemble. Documents Préliminaires et Compte Rendu des Séances.
- Budapest. Société Hongroise de Géographie. Bulletin. Tome XXXV., Fascicules 1-10.
- Buenos Aires. Instituto Geografico Argentino. (Nothing received.)
- Buenos Aires. Museo Nacional de Buenos Aires. Anales. Série III., Tomo VI.-VIII.
- Buenos Aires. Ministerio de Agricultura. Boletim. Tomo VII., Nos. 3, 4, 5, 6. (See also List of Books.)
- Buenos Aires. City of Buenos Aires. Statistical Annuary. XVIth year. 1906.
- Buenos Aires. Monthly Bulletin of Municipal Statistics. 1906, Nos. 11-12; 1907, Nos. 1-12.
- Cairo. Société Khedeviale de Géographie. Bulletin. Series VI., No. 12; VII., No. 1.
- Cambridge. Peabody Museum of American Archaeology and Ethnology. Harvard University. Memoirs. (Nothing received.)

- Cassel. Verein für Erdkunde. Jahresbericht XXIV., XXV.
- Christiania. Norges Geografiske Opmaalning. (See List of Maps.)
- Copenhagen. Geografisk Tidsskrift Udgivet af Bestyrelsen for det Kongelige danske Geografisk Selskab. Bind 19. Hefte 1., II., IV.
- Darmstadt. Verein für Erdkunde. Notizblatt. Folge IV., Heft 27.
- Dijon. Société Bourguignonne de Géographie et d'Histoire. Mémoires. Tome XXII.
- Douai. Union Géographique du Nord de la France. Bulletin. 1905, Parts 3, 4; 1906, 1-4; 1907, 1, 2, 4.
- Dresden. Verein für Erdkunde. Mitteilungen. Heft 5, 6. Mitglieder-Verzeichnis. April, 1907.
- Dunkerque. Société de Géographie. Bulletin. Nos. 32, 33, 34.
- Firenze (Florence). Rivista Geografica Italiana. Bollettino. Annata XIV., Fascicolo 1-10.
- Firenze (Florence). L'Opinione Geografica. Revista de Geografia Didattica. Ano III., Nos. 1-12.
- Frankfurt. Verein für Geographie und Statistik. Jahresbericht. Siebzigster Jahrgang, 1905-1906.
- Geneva. "Le Globe." Organe de la Société de Géographie. Bulletin. Tome XLVI., Nos. 1, 2 and Mémoires.
- Geneva. Société des Anciens Elèves de l'Ecole Supérieure. Bulletin. Nos. 75-78.
- Greifswald. Geographische Gesellschaft zu Greifswald. Jahresbericht. Vol. x. 1882-1907 Bericht über die Tätigkeit der Gesellschaft in den ersten 25 Jahren ihres Bestehens erstattet vom Vorstand Greifswald, im Februar, 1907.
- Halle. Verein für Erdkunde. Mitteilungen. 1907.
- Halle. Kaiserlichen Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher. Leopoldina. Heft XLII., 1906; Heft XLIII., 1907.
- Hamburg. Geographische Gesellschaft. Mitteilungen. Band XXII.
- Hamburg. Horizontalpendel Station. Professor Dr. R. Schütt. Mitteilungen. Die Uhrenanlage der Hauptstation für Erdbelrenforschung am physikalischen Staatslaboratorium zu Hamburg. Von Dr. S. Bieler im München.
- Hannover. Geographische Gesellschaft. Jahresbericht. Zweiter Nachtrag, Dritter Nachtrag. Zum Kataloge der Stadt-Bibliothek zu Hannover.
- Havre. Société de Géographie Commerciale. Bulletin. 1905, Nos. 3, 4; 1906, 2, 3, 4; 1907, 1-4.
- Havre. Société Géologique de Normandie. Bulletin. 1906, Tome XXVI.
- Helsingfors. Société de Géographie de Finlande. (Nothing received.)
- Helsingfors. Meddelanden of Geografiska Foreningen. Velenskagliga. (Nothing received.)
- Hermanstadt. Siebenburgischen (Transylvanian) Karpathenverein. Jahrbuch. (Nothing received.)
- Irkutsk. Imperial Russian Geographical Society. East Siberian Section. (Nothing received.)
- Jena. Geographische Gesellschaft. Mitteilungen. Band XXV.
- Kazan. Naturalists' Society of the Imperial University. Journal. (Nothing received.)
- Königsberg. Physikalisch-Okonomischen Gesellschaft. Schriften. 1906, Vol. XLVII.
- La Paz. Sociedad Geografica de La Paz. (See List of Books.)

- La Paz. Oficina Nacional de Inmigracion, Estadistica y Propaganda Geografica. Revista. Ano II., Nos. 19, 20, 21; III., Nos. 22, 24, 25, 26, 27. (See also List of Books.)
- La Plata. Direccion General de Estadistica de la Provincia de Buenos Aires. Boletin Mensual. Nos. 77-82.
- La Plata. Museo de La Plata. (See List of Books.)
- La Plata. Publicaciones de la Universidad de La Plata. (Nothing received.)
- Leipzig. Verein für Erdkunde. Mitteilungen. 1906.
- Lille. Société de Géographie. Bulletin. 1907, Nos. 1-12.
- Lima. Sociedad Geografica. Memoria Anual y Anexos. Tomo XVIII.; XIX., Nos. 1, 3; XXI., No. 1.
- Lima. Cuerpo de Ingenieros de Minas del Peru. Boletin. Nos. 47, 48, 49, 51, 52, 54.
- Lisbon. Sociedade de Geographia de Lisboa. Boletim. Serie XXV., Nos. 1-12. No Centenario de Bento de Goes (1607-1907) Homenagem de Sociedade de Geographia de Lisboa, 11 de April. de 1907.
- Lübeck. Geographische Gesellschaft und Naturhistorische Museums. Die Geographische Gesellschaft in Lübeck in den ersten 25 Jahren ihres Bestehens, 1882-1907.
- Lwowie (Lemberg). Towarzystwa Ludozonawezego we Lwowie. Lud. XII., 1-4.
- Madison. Wisconsin Academy of Science, Arts and Letters. Transactions. Vol. XV., Part I.
- Madison. Wisconsin Geological and Natural History Survey. Bulletin. No. XV., "The Clays of Wisconsin and their Uses"; XVI., "The Geology of North Central Wisconsin"; XVII., "The Abandoned Shore-Lines of Eastern Wisconsin"; XVIII., "Rural Highways of Wisconsin."
- Madrid. Sociedad Geografica. Boletin. Tomo XLIX., Nos. 1-4. Revista. Tomo IV., Nos. 1-12.
- Madrid. Ayuntamiento de Madrid. Estadistica Demográfica. June, 1906, to June, 1907. Boletin. Nos. 523-574.
- Marseille. Société de Géographie. Bulletin. Tome XXX., Nos. 2, 3, 4.
- Metz. Verein für Erdkunde. (Nothing received.)
- Mexico. Sociedad Científica "Antonio Alzate." Memorias y Revista. Tomo XXII., Nos. 9-12; XXIII., 5-12; XXIV., 1-12.
- Mexico. Sociedad Mexicana de Geografia y Estadistica. (Nothing received.)
- Milan. L'Esplorazione Commerciale. Anno XXII., Fasc. 1-24.
- Missoula (Montana). University of Montana. University Bulletin. Nos. 36, 39-42.
- Montevideo. Museo Nacional. Anales. Vol. VI., Flora Uruguayana, Tomo III., Entrega II.
- Montpellier. Société Languedocienne de Géographie. Bulletin. Tome XXIX., Nos. 3, 4; XXX., 2, 3.
- Moscow. Geographical Section of the Imperial Society of Natural Science of the University. (Nothing received.)
- Munich. Geographischen Gesselschaft. Mitteilungen. Band II., Heft 1, 2.
- Nancy. Société de Géographie de l'Est. Bulletin. 1906. Nos. 3, 4; 1907. 1, 2, 4.
- Nantes. Société de Géographie. Bulletin. 1906; 1907, Nos. 1-4.
- Naples. Società Africana d'Italia. Bollettino. Anno XXVI., Fasc. 1-9.

- Neuchâtel. Société Neuchâteloise de Géographie. 1906. Tome XVII; 1907, Tome XVIII.
- New York. American Geographical Society. Bulletin. Vol. XXXIX., Nos. 1-12.
- New York. American Museum of Natural History. Bulletin. 1906, Vol. XXII.; 1907, Vol. XXIII. Annual Report, 1907.
- New York. The Journal of Geography. Vol. VI., Nos. 1-5.
- New York. Public Library (Astor, Lenox and Tilden Foundation). Bulletin. Vol. XI., Nos. 1-12.
- Nürnberg. Naturhistorische Gesellschaft. Abhandlungen. Band XVI. Jahresbericht, 1905.
- Odessa. Club Alpin de Crimée. Bulletin. 1907. Nos. 1-6.
- Omsk. Imperial Russian Geographical Society. West Siberian Branch. Report of Proceedings. Vol. XXXI.
- Oran. Société de Géographie et d'Archéologie. Bulletin Trimestriel. Tome XXVII, Nos. 110-113.
- Para (Brazil). Museo Paraense de Historia. Natural e Ethnographia. (Nothing received.)
- Paris. Société de Géographie. "La Géographie." Tome XIV., Nos. 2-6; XV. 1-6; XVI., 1-6.
- Paris. Société de Géographie Commerciale. Bulletin. Tome XXIX., No. 1-12.
- Paris. Société de Spéléologie. Spelunca. Vol. III., Nos. 17-20; IV., 23-31; V., 33-34; VII., 47, 48, 49.
- Paris. Société de Topographie. Bulletin. Tome XXX., Nos. 7-12; XXXI., 1-12.
- Paris. Comité de l'Afrique Française. Bulletin. 1907. Nos. 1-12. Les Renseignements Coloniaux. Nos. 1-12.
- Paris. Service Géographique et des Missions du Ministère des Colonies. Revue Coloniale. New Series. Nos. 46-57.
- Paris. Statistique Municipale. Ville de Paris. (Nothing received.)
- Philadelphia. American Philosophical Society. Proceedings. Vol. XLV., No. 184; XLVI., 185, 186, 187.
- Philadelphia. Commercial Museum. (Nothing received.)
- Philadelphia. Geographical Society. Bulletin. 1907. No. 1-4.
- Philadelphia. The Department of Archæology. Free Museum of Science and Art. University of Pennsylvania. (Nothing received.)
- Prague. Société de Géographie tchèque à Prague. Revue. (Nothing received.)
- Rochefort. Société de Géographie. Bulletin. 1906. Nos. 3, 4; 1907. Nos. 1, 2, 3.
- Rolla, Mo. Missouri Bureau of Geology and Mines. Biennial Report to the 44th General Assembly.
- Rome. Società Geografica Italiana. Bollettino. Vol. VIII., Nos. 1-12.
- Rome. Institute Internationale de Statistique. Bulletin. Vol. XVI., No. 1.
- Rome. Bollettino dell' Emigrazione. 1907. Nos. 1-20.
- Rome. Annuario Statistico Italiano. 1905-1907. Fasc. 1.
- Rome. Movimento della Popolazione Secondo Gli Atti dello Stato Civile Nell' Anno 1905.
- Rome. Istituto Cartografica Italiana. (Nothing received.)

- Rouen. Société Normande de Géographie. Bulletin. 1906, Nos. 1-4; 1907, Nos. 1-3.
- San Francisco. Southern Pacific Railway. "Sunset." Vol. XVIII., Nos. 3, 4, 5; XIX. 1-6; XX. 1, 2.
- San Francisco. Geographical Society of the Pacific. Bulletin. 1907, Vol. IV., Series 11.
- San José. Instituto Fisco Geografico de Costa Rica. "Mollusques de l'Isla del Coco." Par Professeur P. Biolley. Maps.
- St. Nazaire. Société de Géographie Commerciale. Bulletin. 1906, Vol. XX. Saint Nazaire; Son Port et Son Commerce. Plan and Illustrations.
- St. Petersburg. Imperial Russian Geographical Society. Journal. (Nothing received.)
- Santiago (Chili). Deutsche Wissenschaftlichen Vereins Verhandlungen. (Nothing received.)
- Shanghai. Imperial Maritime Customs, China. Statistical Series: Nos. 3 and 4, Parts 1 and 2 (Vols. i-v), Returns of Trade and Trade Reports for 1906. Part 3, Analysis of Foreign Trade (Vol. i, Imports; Vol. ii, Exports). Quinquennial Reports and Returns, 1902-1906.
- Stettin. Gesellschaft für Völker- u- Erdkunde. (Nothing received.)
- Stockholm. Svenska Sällskapet för Antropologi och Geografi. Ymer. 1907. Häft 1-4.
- Stuttgart. Württembergische Vereins für Handelsgeographie. Jahresbericht xxiv und xxv. 1905-1906. Feier seines 25 jährigen Jubiläums, 27 Februar, 1907.
- Tokio. Geographical Society Journal. 1906, Nos. 211-216; 1907, Nos. 217-228.
- Toulouse. Société de Géographie. Bulletin. 1906, Nos. 2, 3, 4; 1907, Nos. 1, 2, 3.
- Tours. Société de Géographie. Revue. 1906, Nos. 3, 4; 1907, Nos. 1, 3, 4.
- Upsala. Geological Institution of the University of Upsala. (Nothing received.)
- Vienna. K. K. Geographische Gesellschaft. Mittheilungen. Band L, Nos. 1-12. Abhandlungen, 1905-1907. Band vi, No. 2.
- Vienna. Verein der Geographen an der K. K. Universität in Wien. (Nothing received.)
- Vienna. K. K. Geographische Gesellschaft. Mittheilungen. Band L, Nos. 1-12.
- Washington. National Geographic Society. Magazine. 1907, Nos. 1-12.
- Washington. U.S. Department of Commerce and Labor, Coast and Geodetic Survey. Report. (Nothing received.)
- Washington. U.S. Geological Survey. C. D. Walcott, Director. Twenty-Seventh Annual Report, 1905-1906.
- Washington. U.S. Geological Survey. Monographs. Volume L.
- Washington. U.S. Geological Survey. Professional Papers. Nos. 46, 51-54, 57. (See List of Books.)
- Washington. U.S. Geological Survey. Bulletins. Nos. 279, 286, 287, 294-297, 299, 300, 302-308, 310-315, 317, 318, 320, 323, 324. (See List of Books.)
- Washington. U.S. Geological Survey. Mineral Resources of the United States. 1905.
- Washington. U.S. Geological Survey. Water Supply and Irrigation Papers. Nos. 161, 182-185, 187-206, 208. (See List of Books.)

- Washington. Smithsonian Institution. Reprints of a Geographical Character from the Report for 1905. Nos. 1679, 1680, 1681.
- Washington. U.S. National Museum. Reports for the years ending June 30th, 1905; June 30th, 1906; and June 30th, 1907.
- Washington. U.S. Department of Agriculture. Weather Bureau. Report of the Chief for 1905-1906.
- Washington. U.S. Department of Agriculture. Weather Bureau. Monthly Weather Review. 1906, November and December, and Annual Summary; 1907, January to December.
- Washington. The United States Board on Geographic Names. Third Report, 1890-1906.
- Washington. U.S. War Department Military Information Division. (Nothing received.)
- Washington. U.S. Bureau of Education. Report of the Commissioner of Education for the year ending June 30th, 1905. Vols. I. and II.

The Museum.

ACCESSIONS.

- Cast of Stone Hammer from Brindlow Pre-historic Mine. Alderley Edge. Original in the possession of Mr. F. S. Graves, Alderley Edge. * Mr. Charles Roeder.
- Rock Samples (last cores of boring, 200 yards deep) obtained by the late Thomas Cooper, Esq., at Congleton, Cheshire. * Mr. Charles Roeder.
- Kabyle Lampstand. Found by Mr. Roeder, during excavations, in Cathedral Passage, Manchester, in 1901. * Mr. Charles Roeder.
- Old Swedish Gun. * Mr. George Thomas.
- Two French Cavalry Swords taken on the Battle Field of Sedan, 1870. * Mr. George Thomas.
- Tomahawk, obtained from a brave of the Crow Tribe of Indians in 1883 at a camp in Montana on the Yellowstone River. * Rev. S. A. Steinthal, F.R.G.S.
- Two Models. One of a "Kayak" and the other of an "Oomiak." Both are excellent models, true in detail and the work of an Eskimo at Egedesminde, Danish North Greenland. * Mr. James Brierley, M.A., F.R.G.S.
- Sections of various kinds of Wood Mounted in book form by a Paris Firm. * Mr. Charles Roeder.

LIST OF MEMBERS.

December 31st, 1907.

Note.—H signifies Honorary, C—Corresponding, L—Life, A—Associate,

* Affiliated Societies. All others are Ordinary Members.

- | | |
|--|--|
| Abbott, James H. | Bentley, Miss R. |
| Adam, Sir Frank Forbes, C.I.E. | Bentley, John Howard, F.R.G.S. |
| L Ainsworth, John, C.M.G. (Nairobi) | Berry, R. H. |
| Alexander, Bernard | Beving, C. |
| Alexander, W. T., J.P. | A Bickerton, Richard |
| Ambler, Robert | Bishop, J. |
| H Argyll, His Grace the Duke of, K.T. | Black, Surgeon-Major W. G.,
F.R.C.S.E. |
| Armstrong, F. | Blake, George Ingle |
| Arning, A. W. | Blake, John Charles, F.R.G.S. |
| Arnold, W. A. | A Blanchoud, Mdle. |
| Aron, L. | A Bleloch, W. |
| Ascoli, E. | Bles, A. J. S. |
| Ashman, Edwin | Bles, Marcus S., J.P. |
| Ashworth, Francis, J.P. | Bles, Philip |
| Ashworth, Wm., F.C.A. | L Boddington, Henry, J.P. |
| Atkinson, George, F.R.G.S. | C Bodio, Professor Luigi, Rome |
| | A Bolivar, Mrs. A. de |
| Balmer, J. E., F.R.G.S. | A Bolivar, Miss G. de |
| L Balmforth, Alfred | H Bonaparte, S. A. Prince Roland, Paris |
| Bardsley, G. W. | H Bond, Rt. Hon. Sir R., K.C.M.G.,
Prime Minister of Newfoundland |
| Barlow, John R., J.P. | Bornmüller, Rudolph |
| Barningham, James | A Bosworth, George R. |
| Barningham, Thomas | H Botha, Rt. Hon. Louis, Prime Min-
ister of the Transvaal |
| Baronian, Z. S. Ipliejian | Bowes, George T. |
| Bax, Wm. Robert | Bradley, N., J.P. |
| A Baxandall, Miss C. | Bradshaw, Wm. |
| A Bayley, Mrs. C. H. | Bramwell, Samuel |
| Beer, Walter | C Brice, A. Montefiore, F.R.G.S. |
| Behrens, Councillor Charles | Bridge, Alfred |
| Behrens, Gustav, J.P. | Brier, Charles |
| Behrens, Harclad L. | H Brierley, James, M.A., F.R.G.S. |
| Behrens, Oliver P. | Briggs, Herbert |
| H Belgians, His Majesty the King of
the, K.G. | Britten, S. |
| C Bellamy, C. H., F.R.G.S., Tourcoing | Broadhurst, E. Tootal, D.L., J.P. |
| A Bellamy, Basil G. | Brooks, J. B. Close |
| Bennie, Andrew | |

- LBrooks, Mrs. S. H.
 LBrooks, S. H., J.P., F.R.G.S.
 Broome, Henry
 Brown, A. E. Buchanan
 LBrown, James, J.P.
 Brown, R. Hope, Carlisle
 Brumm, Charles, J.P.
 Bryant, James
 cBryce, J. Annan, M.P.
 Buckley, W. H., J.P.
 Burditt, G. F.
 ABurgess, Miss Helen M.
 Burgon, Councillor Anthony
 *Burnley Literary and Scientific Club
 Burton, Frank
 LBurton, Frederic, J.P.
 Burton, R. Graham
 Butterworth, Councillor Walter, J.P.
 Byles, C. B.
 Bythell, J. K., J.P.

 Calcutta Imperial Library
 Calder, J. D.
 Calvert, D. R.
 Campbell, Richardson
 ACardwell, J. J.
 ACareswell, George
 Carson, Isaac Pitman
 LCarver, W. Oswald
 Chapman, Wm.
 Cheetham, J. F., M.P.
 Chorlton, Isaac
 Chorlton, James
 Chorlton, J. C., J.P.
 Churchill, Wm. W., junr.
 Clapham, Col. W. W.
 AClarke, Charles A.
 Cocks, John, J.P.
 ACohen, Meyer
 cColbeck, Rev. A.
 LColley, T. H. Davies
 Collier, J. E.
 ACollinge, Miss A.
 Colliver, Peter
 Collmann, C.
 cColquhoun, A. R., F.R.G.S., M.I.C.E
- Congo State, M. le Secrétaire Général,
 Département de l'Intérieur
 Cook, George T.
 LCooper, Mrs. A. H.
 Cooper, J. F.
 Core, Professor T. H., M.A.
 Cox, Dr. Frederic
 Crawford, Wm. L.
 Crewdson, Alfred
 Crompton, Thos. A.
 Crook, Col. H. T., J.P., V.D., C.E.
 Crossley, W. J., M.P.
 ACrosthwaite, Robert, M.A., B.Sc.
 Crowther, Miss E., Altrincham

 Dann, E. W., B.A., F.R.G.S.
 Darbyshire, Alfred
 ADavies, Charles J.
 Dawkins, Prof. W. Boyd, J.P., M.A.,
 F.R.S.
 Dawson, T. Kyle
 hDeakin, Hon. Alfred, Prime Minister
 of Australia
 ADeakin, G. G. D.
 Deakin, Thos. S.
 Dean, Councillor J.
 Deeley, W. J., B.A.
 Dendy, John
 Dennis, Cammack
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 K.G.
 Devonshire, His Grace the Duke of,
 K.G.
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 Donner, Sir Edward, Bart.
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 Dowson, Rev. H. E., B.A.
 LDoxey, Alex. S.
 Duckworth, Charles
 Duckworth, Alderman James, M.P.,
 F.R.G.S.
 Dutton, Thomas

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 Earnshaw, John A.

- Eason, Edward A.
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 Egerton of Tatton, The Right Hon. the Earl
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 Ferguson, Wm.
 Fern, George
 cFief, J. de. Royal Belgian Geographical Society
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 cFisher, Rev. A. B., F.R.G.S.
 Fletcher, R.
 Follows, F. W.
 Forsyth, Henry
 Franc, Henry
 Frank, Ernest
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 nFreshfield, Douglas W., F.R.G.S.
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 Hallworth, Joseph
 Hamp, E. H.
 Hampson, James
 AHandcock, H. C.
 Hanemann, A.
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 AHarker, George
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 Haworth, Thos.
 Haworth, W., J.P., Accrington
 Haywood, James H.
 Haze, Geo. A.
 Healey, Councillor D. (His Worship
 the Mayor of Heywood)
 LHealey, W., J.P.
 Heap, Frederic
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 dale
 Helm, S. L.
 Henriques, D. Q.
 cHerbertson, A. J., M.A., Ph.D., Ox-
 ford
 Herford, Miss C.
 Hering, M. G.
 Hesketh, W. R.
 AHewit, R. P. J.P.
 Hewitt, Elkanah
 LHeys, John, J.P.
 Heywood, Abel, J.P.
 Hicks, George
 Hiersmann, K. W., Leipzig
 Higginbottom, Walter
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 Hilton, John S.
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 Hockin, C. Owen
 Hodgson, William
 AHolden, Henry
 Holland, Sir W. H., M.P.
 AHollingworth, Edgar
 Hope, R. Ernest
 Hopkinson, A., Q.C. (The Vice-Chan-
 cellor of Victoria University)
 Hopkinson, Edward, D.Sc.
 AHopwood, Miss Mary
 Horsfall, T. C., J.P.
 Houghton, John
 Houldsworth, Sir W. H., Bart.
 Hoy, Alderman Sir Jas., J.P.
 Hoyle, E.
 Hoyle, W. E., M.A.
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 Hulton, Edward
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 Hutton, R. W.
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 Jackson, Fred J.
 AJackson, William
 HJameson, Rt. Hon. L. S., C.B., Prime
 Minister of Cape Colony
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 Jenkins, Alderman T. H., J.P.
 Johnson, E.
 Johnson, James
 Johnson, Lionel M.
 AJohnson, Oscar
 cJohnston, Sir H. H., F.R.G.S.
 Johnstone, Charles Andrew
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 cKeiffer, F., Moscow
 Kelley, J. Macpherson
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 nMorgan, E. Delmar, F.R.G.S.
 aMoss, Miss M. A.
 Moxon, Thomas Bouchier
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 Neild, Jesse
 Neill, Robert, J.P.

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 Riley, Thomas
 HRoberts, Field Marshal the Right
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 Robertshaw, James
 Robertson, W. J.
 Robinson, W. H.
 Rodger, G. F. E.
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 ARoeder, Charles
 Rogerson, James
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 AStewart, Robert
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 HSwallow, Rev. R., M.D.
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 LSykes, Arthur H., D.L., J.P.
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 Tatham, Leonard
 ATatton, Lees W.
 ATaylor, Albert
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 Taylor, William
 Tejeria, Antonio Maria, Spanish Consul
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 LThomas, George
 AThomas, P.
 Thompson, J. A.
 Thompson, W. G.
 Thompstone, Mark W.
 cThomson, J. P., F.R.S.G.S., Brisbane
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| Thorpe, Walter | Weiss, Prof. F. E., D.Sc. |
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| Prime Minister of New Zealand | AWoolston, Miss M. |
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| cWardrop, A. Tucker, F.R.G.S. | LWrathmell, T. |
| AWarren, Geo. H. | |
| Waterhouse, I. C. | |
| AWatson, Col. Sir C. M., K.C.M.G., | Zabern, T. von |
| R.E. | Zimmern, Fritz |
| Watt, Richard H. | Zimmern, W. H. |

THE
MANCHESTER GEOGRAPHICAL SOCIETY.

RULES.

I. OBJECT AND WORK.

The object of the Manchester Geographical Society is to promote the study of all branches of Geographical Science, especially in its relations to commerce and civilisation.

The work of the Society shall be :—

1. To further in every way the pursuit of the science; as, by the study of official and scientific documents, by communications with learned, industrial and commercial societies, by correspondence with consuls, men of science, explorers, missionaries, and travellers, and by the encouragement of the teaching of geography in schools and colleges.

2. To hold meetings at which papers shall be read, or lectures delivered by members or others.

3. To examine the possibility of opening new markets to commerce and to collect information as to the number, character, needs, natural products and resources of such populations as have not yet been brought into relation with British commerce and industry.

4. To promote and encourage, in such way as may be found expedient, either alone or in conjunction with other Societies, the exploration of the less known regions of the earth.

5. To inquire into all questions relating to British and Foreign colonization and emigration.

6. To publish a Journal of the proceedings of the Society, with a summary of geographical information.

7. To form a collection of maps, charts, geographical works of reference, and specimens of raw materials and commercial products.

8. The Society shall not enter into any financial transactions beyond those necessarily attached to its declared object, and shall not make any dividend, gift, division, or bonus in money unto or between any of its members.

II. ORGANISATION.

9. The Society shall consist of ordinary, associate, corresponding, and honorary members.

10. A Council shall be chosen annually from the ordinary members to conduct the affairs of the Society. It shall consist of a President, four or more

Vice-Presidents, a Treasurer, two or more Honorary Secretaries (including a Secretary for Foreign Correspondence), and twenty-one Councillors.

11. There shall be three Trustees elected by the Society, who shall hold office until death, disability, insolvency, or resignation. They shall be members of the Council by virtue of their office.

12. Any vacancy occurring in the Council during the current year may be filled up by the Council.

III. ELECTION OF MEMBERS.

13. Every candidate for admission into the Society as an ordinary or an associate member must be proposed by a member. The proposal shall be read out at the next Ordinary Meeting of the members, and any objection shall be forwarded in writing to the Secretary within seven days.

14. The election of members is entrusted to the Council. The names of those elected shall be announced from the chair at the next Ordinary Meeting after the election.

15. The Secretary shall within three days forward to every newly-elected member notice of his election, a copy of the Rules of the Society, and a card announcing the days on which the Ordinary Meetings will be held during the session. But the election of an ordinary or associate member shall not be complete, nor shall he be permitted to enjoy the privileges of a member, until he shall have paid his first year's subscription. Unless such payment be made within three calendar months from the date of election the election shall be void.

16. The Council shall have power to elect honorary and corresponding members.

17. Women shall be eligible as members and officers of the Society.

IV. PAYMENTS.

18. An ordinary member shall pay an annual subscription of £1. 1s., or he may compound by one payment of £10. 10s. An associate member shall pay an annual subscription of 10s. 6d. The Society's year shall begin on the first day of January.

19. Members shall not be entitled to vote or to enjoy any other privilege of the Society so long as their payment shall continue in arrear, but associate members shall not vote nor shall they take any part in the government of the Society.

20. The first annual payment of a member elected in November or December shall cover his subscription to the 31st December in the year following.

21. On the first day of January in each year there shall be put up in the rooms of the Society a complete list of the members with the amount of their subscription due, and as the amounts are paid the fact shall be marked on the list.

22. Notice shall be sent to every member whose subscription shall not have been paid by the first of February, and if the arrears are not discharged by the first of July the Council may remove the member from the list of members. Any member, whose subscription is in arrear for two years shall not be entitled to receive the Journal of the Society.

V. MEETINGS.

23. The meetings of the Society shall be of three kinds—Ordinary, Annual, and Special.

24. In all meetings a majority of those present shall decide all questions, the President or Chairman having a casting vote in addition to his own.

ORDINARY MEETINGS.

25. The Ordinary Meetings of the Society shall be held once a month, from the month of October to the month of May, or oftener, if judged expedient by the Council.

26. All members whose subscriptions are not in arrear shall have a right to be present. All ordinary members shall have the privilege of introducing one visitor.

27. The order of proceedings shall be as follows :—

- (a) The minutes of the last meeting to be read and if correctly recorded they shall be signed by the Chairman.
- (b) Presents, whether of money, books, maps, charts, instruments or specimens made to the Society to be announced.
- (c) The election of new members to be declared and the names of candidates to be read.
- (d) Papers and communications to be read and discussed.

28. At these meetings nothing relating to the rules or management shall be brought forward, but the minute book of the Council shall be on the table at each meeting for the inspection of any member, and extracts therefrom may, with the consent of the chairman, be read to the meeting on the requisition of any member.

29. On occasions of exceptional interest the Council may make provision for a larger admission of visitors.

ANNUAL MEETINGS.

30. The Annual Meeting of the members shall be held at such time and place as the Council shall determine.

31. Fourteen days' notice of such meeting shall be sent to every member within the United Kingdom who has given his address to the Secretary, and notice of the meeting shall be advertised in such newspapers as the Council may direct.

32. The object of this meeting shall be to receive the Annual Report of the Council and the Treasurer's Balance Sheet, to hear the President's address, to elect the Council and officers for the ensuing year, and to transact any other business.

33. Any two ordinary members may nominate candidates for the Council or for office not later than one week prior to the day of election, and the names of candidates so nominated shall be at once put up in the rooms of the Society. The election of the Council and officers shall be by ballot.

SPECIAL GENERAL MEETINGS.

34. The Council may call a Special General Meeting of the Society whenever they shall consider it necessary, and they shall do so if required by 20 ordinary members.

35. A week's notice of the time and object of every Special Meeting shall be sent to all members. No other business shall be entertained than that of which notice has been thus given.

36. Twenty ordinary members shall form a quorum.

VI. COUNCIL AND OFFICERS.**THE COUNCIL.**

37. The government of the Society shall be entrusted to the Council, subject to the rules of the Society.

38. The Council shall annually elect a Chairman and Vice-Chairman.

39. The President or the Chairman, or any three members of the Council, may at any time call a meeting thereof, to which every member of the Council shall be summoned.

40. Seven shall form a quorum.

41. In order to secure the most efficient study and treatment of the various subjects which constitute the chief work of the Society, the Council may appoint Committees for special purposes. These Committees, with the approbation of the Council, may associate with themselves any persons—whether members of the Society or not—from whom they may desire to obtain special assistance or information. The Committees shall report to the Council the results of their proceedings.

42. The President, Chairman, Vice-Chairman of the Council, and the Honorary Secretaries, shall, by virtue of their offices, be members of all Committees appointed by the Council.

PRESIDENT AND VICE-PRESIDENTS.

43. The President is, by virtue of his office, the chairman of all the meetings of the Society. In the absence of the President, one of the Vice-Presidents may preside.

CHAIRMAN OF THE COUNCIL.

44. It is the duty of the Chairman of the Council to see that the rules are properly observed, to call for reports and accounts from Committees and Officers, and to summon, when necessary, special meetings of the Council and of Committees.

TREASURER.

45. The Treasurer has the charge of all accounts: he shall pay all accounts due by the Society after they have been examined and approved by the Council.

46. He shall see that all moneys due to the Society are collected, and shall have power, with the approval of the Council, to appoint a collector. All moneys received shall be immediately paid to the bankers of the Society.

47. The bank passbook and the book of accounts shall be laid upon the table at every ordinary meeting of the Council.

48. The accounts shall be audited annually by two members, who shall be elected at an ordinary meeting at least one month before the Annual Meeting.

SECRETARIES.

49. The duty of the Honorary Secretaries shall be :—

- (a) To conduct the correspondence of the Society and of the Council.
- (b) To attend the meetings of the members and of the Council, and minute their proceedings.
- (c) At the ordinary meetings, to announce gifts presented to the Society since their last meeting; to read the names of all new members and of candidates for admission, and the papers communicated to the Society, which have been directed by the Council to be read.
- (d) To have immediate superintendence of all persons employed, to make arrangements for the meetings of the Society, and to take charge of all maps, books, furniture and other effects.

50. It shall be the more especial duty of one of the Honorary Secretaries to conduct, as may be directed by the Council, correspondence with Foreign Societies, and with persons resident abroad.

51. In addition to the Honorary Secretaries, there shall be a paid Secretary appointed by the Council, whose duties shall be to assist the Honorary Secretaries, to issue the notices of the Council and of the Society, and to act under the instructions of the Council.

The foregoing Rules, as now amended, were approved and adopted at a meeting of the members of the Society, of which due notice had been given to the members, held in the Town Hall, Manchester, Wednesday, October 3rd, 1894.

(Signed) GEORGE. *President.*
 S. ALFRED STEINTHAL, *Chairman.*
 F. ZIMMERN, *Honorary Secretary.*
 JAS. D. WILDE, M.A., *Honorary Secretary.*
 ELI SOWERBUTTS, *Secretary.*

[COPY.]

It is hereby certified that this Society is entitled to the benefit of the Act 6 and 7 Vict., Cap. 36, intituled "An Act to exempt from County, Borough, Parochial, and other Local Rates, Lands and Buildings occupied by Scientific or Literary Societies."

Seal of Registry of
 Friendly Societies.

This 15th day of January, 1895.

E. W. B.





NASCAUCEE AND GEORGE RIVERS AS THEY APPEARED IN 1815
(FROM S. F. L. S. HAND AT 1815)
SCALE 1:1,000,000 OR 1:1,000,000 (1 inch = 16.093 statute miles)

MAP OF EASTERN LABRADOR

Showing Grand Lake and the courses of the Nascaucee and

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20'

25'

10'

R. of the N MASSIF

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Tibet

IN

138

KASHMIR

Named by the

MAN EXPEDITION

1906.

1 Inch = 2.76 Stat Miles.

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Achunpo and photographs, and adapted to

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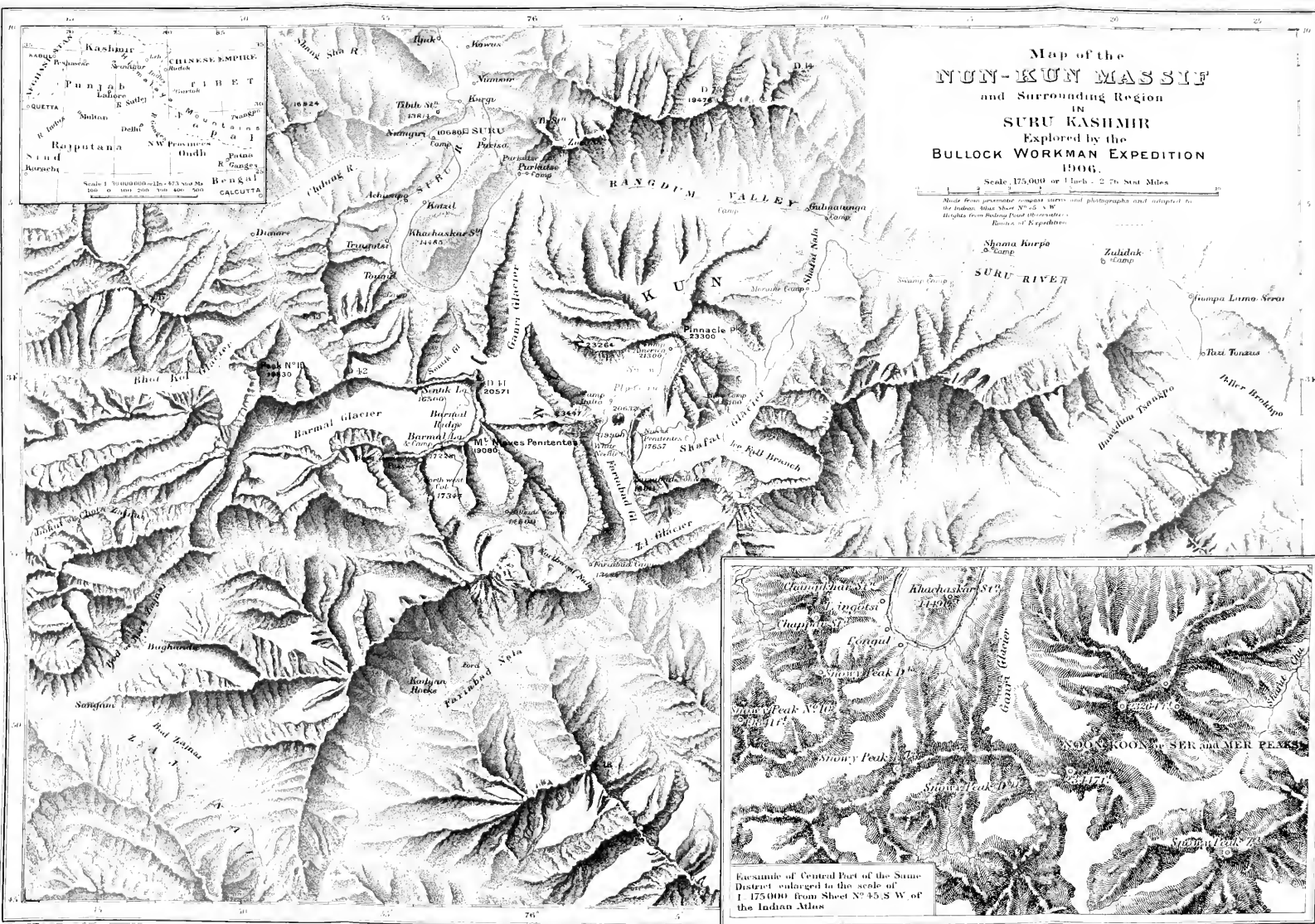
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